MONTHLY WEATHER REVIEW.

Editor: Prof. CLEVELAND ABBE.

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INTRODUCTION.

The MONTHLY WEATHER REVIEW for July, 1900, is based on reports from about 3,101 stations furnished by employees and voluntary observers, classified as follows: regular stations of the Weather Bureau, 158; West Indian service stations, 12; special river stations, 132; special rainfall stations, 48; voluntary observers of the Weather Bureau, 2,562; Army post hospital reports, 22; United States Life-Saving Service, 9; Southern Pacific Railway Company, 96; Canadian Meteorological Service, 32; Mexican Telegraph Service, 20; Mexican voluntary stations, 7; Mexican Telegraph Company, 3. International simultaneous observations are received from a few stations and used, together with trustworthy newspaper extracts and special reports.

Special acknowledgment is made of the hearty cooperation of Prof. R. F. Stupart, Director of the Meteorological Service of the Dominion of Canada; Mr. Curtis J. Lyons, Meteorologist to the Hawaiian Government Survey, Honolulu; Señor Manuel E. Pastrana, Director of the Central Meteorological and Magnetic Observatory of Mexico; Camilo A. Gonzales, Director-General of Mexican Telegraphs; Mr. Maxwell Hall, Government Meteorologist, Kingston, Jamaica; Capt. S. I. Kimball, Superintendent of the United States Life-Saving Service; and Commander Chapman C. Todd, Hydrographer, United States Navy.

The REVIEW is prepared under the general editorial supervision of Prof. Cleveland Abbe.

Attention is called to the fact that the clocks and self-registers at regular Weather Bureau stations are all set to seventy-fifth meridian or eastern standard time, which is exactly five hours behind Greenwich time; as far as practicable, only this standard of time is used in the text of the REVIEW, since all Weather Bureau observations are required to be taken and recorded by it. The standards used by the public in the United States and Canada and by the voluntary observers are believed to conform generally to the modern international system of standard meridians, one hour apart, beginning with Greenwich. The Hawaiian standard meridian is 157° 30′ or $10^h\ 30^m$ west of Greenwich. Records of miscellaneous phenomena that are reported occasionally in other standards of time by voluntary observers or newspaper correspondents are sometimes corrected to agree with the eastern standard; otherwise, the local standard is mentioned.

FORECASTS AND WARNINGS.

By Prof. E. B. GARRIOTT, in charge of Forecast Division.

No severe storm of a general character appeared in the United States or the West Indies in July, 1900.

During the early part of the month local rains and thunderstorms occurred from the States of the Missouri Valley over the Lake region, New York, and northern New Jersey. On the 13th an extraordinary fall of rain occurred at Galveston, Tex., a depth of 14 inches being recorded in twenty-four hours, of which amount 3 inches fell in sixty minutes. Heavy rain fell in Texas on the 15th, and in the valley of Guadalupe River damage was caused by freshets. On the same day rains broke a prolonged period of drought and high temperature in the western and northwestern States, and during the next few days the conditions which caused these rains extended eastward to the Atlantic coast and ended a heated term of unusual intensity and duration in the Lake region, the Ohio Valley, and Middle Atlantic States. During the 24th needed rain fell over a large area in the central western States.

The rains of the month, although local in character, were, for the most part, accurately forecast, and information regarding the heated period was contained in the regular forecasts, and in special notices, or bulletins, furnished to the daily press.

CHICAGO FORECAST DISTRICT.

No storm warnings were issued for the upper Lakes during the month.

The weather was generally seasonable in the upper Lake region and in the northern and middle Rocky Mountain districts.—*Frank H. Bigelow, Professor.*

SAN FRANCISCO FORECAST DISTRICT.

The month, as a whole, was uneventful.

On the 20th thunderstorms, with high southeast wind, prevailed in Arizona. This rain, which was forecast for northern Arizona the morning of the 19th and for the entire State the evening of the 19th, broke a protracted drought in that section.—*Alexander G. McAdie, Forecast Official.*

PORTLAND, OREG., FORECAST DISTRICT.

There were no storms or unusual weather characteristics in this district during the month and no special warnings were issued.—*Edward A. Beals, Forecast Official.*

HAVANA, CUBA, FORECAST DISTRICT.

No important storms occurred, and no hurricane warnings were issued during the month.—*William B. Stockman, Forecast Official.*

AREAS OF HIGH AND LOW PRESSURE.

During the month there were charted nine highs and twelve lows. (See Charts I and II.) A brief description of some of their more marked characteristics follows herewith:

None were of such a character as to merit special description. The majority of the highs originated west of the one hundred and fifth meridian, and six of them reached the Atlantic coast. But one passed south of the thirty-sixth parallel. Twice during the month a high pressure area persisted near the south Atlantic and east Gulf coasts for four or five days, and, in combination with low areas in the Northwest, caused severe hot waves in the Ohio Valley and Middle Atlantic States.

Movements of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long W.	Length.	Duration.	Daily.	Hourly.
High areas.		°	°		°	°	Miles.	Days.	Miles.	Miles.
I	6, a. m.	47	123	11, a. m.	39	75	3,255	5.0	651	27.1
II	10, a. m.	51	114	13, p. m.	33	80	2,320	3.5	663	27.6
III	15, a. m.	53	108	16, a. m.	97	50	565	1.0	565	23.5
IV	16, a. m.	43	109	21, a. m.	45	64	2,680	5.0	536	22.3
V	18, a. m.	47	123	22, p. m.	42	70	2,970	4.5	660	27.5
VI	21, a. m.	51	114	23, p. m.	47	92	1,200	2.5	480	20.0
VII	25, a. m.	50	100	29, a. m.	39	75	2,050	4.0	512	21.3
VIII	28, p. m.	40	105	31, a. m.	37	90	1,300	2.5	520	21.7
IX	30, a. m.	50	108	2, p. m.*	39	75	2,050	3.5	586	24.4
Sums							18,390	31.5	5,173	215.4
Mean of 9 paths							2,043		575	23.9
Mean of 31.5 days									584	24.3
Low areas.										
I	2, p. m.	45	93	5-6, a. m.	48	54	2,000	2.5	800	33.3
II	8, a. m.	54	114	14, p. m.	46	60	3,065	6.5	472	19.7
III	10, p. m.	45	118	13, a. m.	44	98	1,660	2.5	664	27.7
IV	13, a. m.	54	114	16, a. m.	46	78	1,820	3.0	607	25.3
V	15, a. m.	40	109	19, a. m.	46	60	2,860	4.0	715	29.8
VI	16, p. m.	54	114	19, p. m.	46	86	1,720	3.0	573	23.9
VII	19, a. m.	38	100	21, p. m.	48	68	1,925	2.5	770	32.1
VIII	19, p. m.	54	114	22, p. m.	48	85	1,830	3.0	732	31.0
IX	22, p. m. / 23, p. m.	39	100	26, a. m.	47	65	2,080	2.5	832	34.7
X	25, a. m. / 25, p. m.	54	114	30, a. m.	48	68	2,320	4.5	516	21.5
XI	28, p. m.	54	114	31, p. m.	48	68	3,060	3.0	1,020	42.5
XII	31, p. m.	51	114	1-2, p. m.*	44	103	700	1.0	700	29.2
Sums							25,040	38.0	8,401	350.7
Mean of 12 paths							2,087		700	29.2
Mean of 38 days									659	27.5

* August.

The lows, as a rule, originated in the extreme Northwest, west of the one hundred and tenth meridian. They moved generally eastward, and three of them reached the Atlantic coast. Three disappeared in Ontario. Three others, Nos. V, VII, and IX originated in the extreme central west and moved northeastward to the Atlantic Ocean by way of Canada. Two, Nos. III and XII, were dissipated in South Dakota. None moved south of the thirty-seventh parallel, and east of the Mississippi River there were none south of the forty-second parallel.—*H. C. Frankenfield, Forecast Official.*

RIVERS AND FLOODS.

The abnormally low water which prevailed during June in the Mississippi River north of the mouth of the Illinois, was considerably augmented during July by ample falls of rain, and the average stages were about one foot higher than during June. Fair navigable stages prevailed after the first few days of the month, but at its close the water was again falling generally.

The Missouri fell steadily throughout the month, while in the lower Mississippi the stages were extremely favorable for navigation.

Ample stages also prevailed in the Ohio River, with the maximum stages above the mouth of the Tennessee, as a rule, during the closing days of the month.

From Paducah, Ky., to Cairo, Ill., the highest stages were recorded on the 1st and 2d, on account of the moderate flood out of the lower Tennessee River, which was in progress at the end of June, and which continued through the 2d of July. Warnings of this flood were accurate and timely, but unavoidable damage to growing crops, etc., amounting to perhaps $75,000, was caused by high water.

In the rivers of the eastern system nothing worthy of special note transpired, although high stages prevailed in the Black Warrior and lower Tombigbee rivers during the first few days of the month.

The highest and lowest water, mean stage, and monthly range at 128 river stations are given in Table XI. Hydrographs for typical points on seven principal rivers are shown on Chart V. The stations selected for charting are: Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.—*H. C. Frankenfield, Forecast Official.*

CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Division.

The following extracts relating to the general weather conditions in the several States and Territories are taken from the monthly reports of the respective sections of the Climate and Crop Service. The name of the section director is given after each summary.

Rainfall is expressed in inches and temperature in degrees Fahrenheit.

Alabama.—The mean temperature was 79.8°, or 0.2° below normal; the highest was 102°, at Eufaula on the 7th, and the lowest, 56°, at Maple Grove on the 10th. The average precipitation was 4.93, or 0.38 below normal; the greatest monthly amount, 9.69, occurred at Daphne, and the least, 0.45, at Fort Deposit.—*F. P. Chaffee.*

Arizona.—The mean temperature was 84.6°, or 0.7° above normal; the highest was 120°, at Signal on the 11th, and the lowest, 34°, at Flagstaff on the 4th. The average precipitation was 0.65, or 1.31 below normal; the greatest monthly amount, 2.97, occurred at Mount Huachuca, while none fell at a number of stations.—*W. G. Burns.*

Arkansas.—The mean temperature was 79.7°, or 0.7° below normal; the highest was 102°, at Jonesboro on the 3d, and the lowest, 51°, at Witts Springs. The average precipitation was 4.46, or 0.63 above normal; the greatest monthly amount, 8.37, occurred at Wiggs, and least, 1.09, at Osceola.—*E. B. Richards.*

California.—The mean temperature was 75.9°, or 0.4° below normal; the highest was 126°, at Salton on the 13th, and the lowest, 30°, at Bodie on the 2d. The average precipitation was 0.03, or 0.02 below normal; the greatest monthly amount, 1.10, occurred at Needles, while none fell at over 100 stations.—*Alexander G. McAdie.*

Colorado.—The mean temperature was 67.7°, or about normal; the highest was 109°, at Delta on the 12th, and the lowest, 25°, at Wagonwheel Gap on the 2d, 6th, and 17th. The average precipitation was 1.13, or about 1.20 below normal; the greatest monthly amount, 4.57, occurred at Wray, while only a trace fell at a majority of stations located on the upper drainage areas of the Arkansas, Grand, and Gunnison rivers.—*F. H. Brandenburg.*

Florida.—The mean temperature was 81.7°, or 0.3° above normal; the highest was 101°, at Ocala on the 6th and at Gainesville on the 7th and 11th, and the lowest, 62°, at St. Francis on the 16th. The

average precipitation was 7.41, or 0.73 above normal; the greatest monthly amount, 15.36, occurred at Sumner, and the least, 2.17, at Hypoluxo.—*A. J. Mitchell.*

Georgia.—The mean temperature was 80.3°, or 0.5° above normal; the highest was 103°, at Fitzgerald on the 5th, and the lowest, 53°, at Dahlonega on the 10th. The average precipitation was 5.12, or 0.63 below normal; the greatest monthly amount, 14.98, occurred at Quitman, and the least, 1.87, at Carlton.—*J. B. Marbury.*

Idaho.—The mean temperature was 66.6°, or 0.5° below normal; the highest was 115°, at Hagerman on the 30th, and the lowest, 24°, at Marysville on the 19th. The average precipitation was 0.21, or 0.31 below normal; the greatest monthly amount, 1.06, occurred at Kootenai, and the least, trace, at Challis and Murray.—*S. M. Blandford.*

Illinois.—The mean temperature was 75.6°, or 0.5° below normal; the highest was 99°, at Bushnell on the 3d, and the lowest, 41°, at Lanark on the 9th. The average precipitation was 4.23, or 0.63 above normal; the greatest monthly amount, 11.96, occurred at Palestine, and the least, 0.77, at Centralia.—*M. E. Blystone.*

Indiana.—The mean temperature was 75.6°, or 0.7° above normal; the highest was 99°, at Princeton on the 14th, and the lowest, 45°, at South Bend and Winamac on the 12th and at Fairmount on the 13th. The average precipitation was 4.66, or 1.45 above normal; the greatest monthly amount, 8.02, occurred at Angola, and the least, 2.32, at Paoli.—*C. F. R. Wappenhans.*

Iowa.—The mean temperature was 73.4°, or about normal; the highest was 102°, at Logan on the 6th, and the lowest, 37°, at Larchwood on the 22d. The average precipitation was 6.15, or 2.47 above normal; the greatest monthly amount, 18.45, occurred at Primghar, and the least, 1.80, at Mooar.—*J. R. Sage, Director; G. M. Chappel, Assistant.*

Kansas.—The mean temperature was 77.9°, or about normal; the highest was 106°, at Achilles on the 6th and at Scott on the 9th, and the lowest, 43°, at Colby on the 20th. The average precipitation was 3.46, or 0.38 below normal; the greatest monthly amount, 11.19, occurred at Campbell, and the least, 1.05, at Ellinwood.—*T. B. Jennings.*

Kentucky.—The mean temperature was 77.9°, or 0.8° above normal; the highest was 101°, at Maysville on the 15th, and the lowest, 50°, at Vanceburg on the 1st, and at Jackstown on the 13th. The average precipitation was 4.91, or 0.16 above normal; the greatest monthly amount, 12.84, occurred at Williamsburg, and the least, 2.24, at Frankfort.—*H. B. Hersey.*

Louisiana.—The mean temperature was 80.6°, or 1.1° below normal; the highest was 100°, at Libertyhill on the 6th, and the lowest, 60°, at Opelousas on the 11th. The average precipitation was 7.11, or 1.33 above normal; the greatest monthly amount, 18.39, occurred at Venice, and the least, 2.84, at Como.—*W. T. Blythe.*

Maryland and Delaware.—The mean temperature was 77.5°, or 2.3° above normal; the highest was 106°, at Green Spring Furnace, Md., on the 17th, and the lowest, 35°, at Deerpark, Md., on the 1st. The average precipitation was 3.17, or 1.25 below normal; the greatest monthly amount, 6.13, occurred at New Market, Md., and the least, 1.25, at Washington, D. C.—*Oliver L. Fassig.*

Michigan.—The mean temperature was 67.6°, or 1.4° below normal; the highest was 99°, at Mt. Clemens on the 5th, and the lowest, 30°, at Newberry on the 8th, at Roscommon, on the 10th, and at Omer on the 9th and 28th. The average precipitation was 4.81, or 2.13 above normal; the greatest monthly amount, 8.96, occurred at Mackinaw City, and the leaast, 1.60, at Harbor Beach. The average total precipitation is the greatest ever recorded during July.—*C. F. Schneider.*

Minnesota.—The mean temperature was 68.8°, or about 1.0° below normal; the highest was 102°, at St. Cloud on the 30th, and the lowest, 33°, at New Folden on the 25th. The average precipitation was 5.48, or about 2.00 above normal; the greatest monthly amount, 13.19, occurred at Minnesota City, and the least, 1.58, at Ada.—*T. S. Outram.*

Mississippi.—The mean temperature was 80.7°, or nearly normal; the highest was 100°, at Aberdeen on the 8th, and the lowest, 60°, at a number of stations on different dates. The average precipitation was 6.35, or 1.06 above normal; the greatest monthly amount, 16.67, occurred at Magnolia, and the least, 1.99, at Hernando.—*W. S. Belden.*

Missouri.—The mean temperature was 76.9°, or normal; the highest was 102°, at Appleton City on the 3d, and the lowest, 46°, at Zeitonia on the 27th. The average precipitation was 4.10, or 0.31 below normal; the greatest monthly amount, 9.75, occurred at Oregon, and the least, 0.77, at Palmyra. The precipitation was poorly distributed, some sections receiving less than half the usual amount, while in others there was a marked excess. A remarkably heavy rainfall occurred over portions of Holt, Andrew, Nodaway, Gentry, and Worth counties on the 16th, from 3 to 7 inches falling in less than twenty-four hours. At Oregon, Holt County, where the record extends to 1855, the total precipitation for the month, 9.55 inches, is the second greatest July precipitation on record, the greatest being 12.24 inches in July, 1867.—*A. E. Hackett.*

Montana.—The mean temperature was 66.3°, or normal; the highest was 113°, at Glasgow on the 31st, and the lowest, 28°, at Ovando on the 1st and 12th. The average precipitation was 0.62, or 0.73 below normal; the greatest monthly amount, 1.90, occurred at Wibaux, while none fell at Red Lodge.—*E. J. Glass.*

Nebraska.—The mean temperature was 74.4°, or about 0.3° below normal; the highest was 109°, at Beaver City on the 3d, and the lowest, 40°, at Gothenburg on the 16th, and at Gering and Imperial on the 20th. The average precipitation was 4.54, or 1.10 above normal; the greatest monthly amount, 9.90, occurred at Kennedy, and the least, 1.30, at Wellfleet.—*G. A. Loveland.*

Nevada.—The mean temperature was 70.7°, or about 0.5° below normal; the highest was 113°, at Las Vegas on the 10th, and the lowest, 33°, at Duck Valley on the 1st. The average precipitation was 0.37, or about 0.02 below normal; the greatest monthly amount, 2.35, occurred at Palmetto, while none fell at several stations.—*J. H. Smith.*

New England.—The mean temperature was 70.5°, or 1.7° above normal; the highest was 100°, at Providence, R. I., on the 17th, and the lowest, 39°, at Grafton, N. H., on the 3d. The average precipitation was 3.03, or 1.64 below normal; the greatest monthly amount, 6.61, occurred at Derby, Vt., and the least, 1.22, at Hyannis, Mass.—*J. W. Smith.*

New Jersey.—The mean temperature was 75.9°, or 1.9° above normal; the highest was 104°, at Vineland on the 16th, and the lowest, 42°, at Layton on the 2d. The average precipitation was 4.74, or 0.22 below normal; the greatest monthly amount, 7.21, occurred at Hightstown, and the least, 1.11, at Cape May Courthouse.—*E. W. McGann.*

New Mexico.—The mean temperature was 73.4°, or 0.6° above normal; the highest was 105°, at Lyons Ranch on the 10th and at Bluewater on the 14th, and the lowest, 32°, at Winsors on the 5th. The average precipitation was 1.95, or 1.20 below normal; the greatest monthly amount, 7.16, occurred at Shattuck's Ranch, while none was recorded at Aztec, and only a trace at Bluewater.—*R. M. Hardinge.*

New York.—The mean temperature was 70.6°, or 1.6° above normal; the highest was 101°, at Catskill and Primrose on the 17th, and the lowest, 33°, at Bolivar on the 1st. The average precipitation was 4.10, or 0.23 above normal; the greatest monthly amount, 10.22, occurred at Rome, and the least, 1.33, at Catskill.—*R. G. Allen.*

North Carolina.—The mean temperature was 79.2°, or 1.7 above normal; the highest was 107°, at Chapelhill on the 21st, and the lowest, 44°, at Linville on the 9th. The average precipitation was 4.04, or 1.57 below normal; the greatest monthly amount, 9.42, occurred at Horse Cove, and the least, 1.08, at Wilmington.—*C. F. von Herrmann.*

North Dakota.—The mean temperature was 67.9°, or 0.1° below normal; the highest was 107°, at Medora on the 31st, and the lowest, 33°, at Towner on the 19th. The average precipitation was 2.25, or 0.38 below normal; the greatest monthly amount, 4.83, occurred at Berlin, and the least, 0.37, at Coal Harbor.—*B. H. Bronson.*

Ohio.—The mean temperature was 74.1°, or 0.4° above normal; the highest was 103°, at Richwood on the 4th, and the lowest, 38°, at Hillhouse on the 1st. The average precipitation was 4.62, or 0.73 above normal; the greatest monthly amount, 8.17, occurred at Atwater, and the least, 1.32, at Logan.—*J. Warren Smith.*

Oklahoma and Indian Territories.—The mean temperature was 79.3°, or 1.7° below normal; the highest was 104°, at Ryan on the 8th and 10th, and the lowest, 50°, at Wood on the 26th and 27th. The average precipitation was 4.15, or 0.48 above normal; the greatest monthly amount, 9.15, occurred at Fort Reno, and the least, 1.20, at Tulsa.—*C. M. Strong.*

Oregon.—The mean temperature was 66.3°, or about normal; the highest was 106°, at Pendleton on the 30th, and the lowest, 26°, at Silverlake on the 1st. The average precipitation was 0.24, or 0.21 below normal; the greatest monthly amount, 1.71, occurred at Bullrun, while none fell at several stations.—*E. A. Beals.*

Pennsylvania.—The mean temperature was 74.0°, or 2.5° above normal; the highest was 104°, at Quakertown on the 17th, and the lowest, 35°, at Smethport on the 1st. The average precipitation was 4.86, or nearly normal; the greatest monthly amount, 8.26, occurred at Confluence, and the least, 1.81, at Renovo.—*L. M. Dey.*

South Carolina.—The mean temperature was 81.2°, or 1.7° above normal; the highest was 104°, at Batesburg on the 22d, and the lowest, 55°, at Walhalla on the 9th. The average precipitation was 4.08, or 2.29 below normal; the greatest monthly amount, 11.29, occurred at St. Matthews, and the least, 1.05, at Greenwood.—*J. W. Bauer.*

South Dakota.—The mean temperature was 71.4°, or about 1.0° below normal; the highest was 115°, at Forest City on the 31st, and the lowest, 34°, at Rochford on the 8th and 20th. The average precipitation was 5.21, or about 2.45 above normal; the greatest monthly amount, 13.27, occurred at Yankton, and the least, 0.50, at Hot Springs.—*S. W. Glenn.*

Tennessee.—The mean temperature was 78.2°, or 0.8° above normal; the highest was 99°, at Maryville on the 24th, and the lowest, 45°, at Erasmus on the 10th. The average precipitation was 4.14, or 0.51 below normal; the greatest monthly amount, 8.48, occurred at Elk Valley, and the least, 0.93, at Covington.—*H. C. Bate.*

Texas.—The mean temperature, determined by comparison of 48 stations distributed throughout the State, was 1.5° below the normal. Nearly normal conditions prevailed in scattered localities, but as a rule the temperature ranged generally from 1.0° to 3.5° below the normal. The highest was 105°, at Brownwood on the 5th, and the lowest, 55°, at Alpine on the 31st. The average precipitation, determined by comparison of 56 stations distributed throughout the State, was 2.69 above the normal. Nearly normal conditions prevailed over the Panhandle, the eastern and western portions of north Texas, the eastern

portion of central Texas, and the extreme southwestern portion of the State, while over the other portions there was a general excess, ranging from 1.00 to 15.63, with the greatest along the immediate east coast. The rainfall for the month was not very well distributed. The greatest monthly amount, 18.74, occurred at Galveston, and the least, 0.93, at Santa Gertrudes Ranch.—*I. M. Cline.*

Utah.—The mean temperature was 72.6°, or 0.1° above normal; the highest was 111°, at Fillmore on the 30th, at Giles and St. George on the 11th, and Hite on the 11th and 12th; the lowest was 30°, at Henefer on the 4th and 20th. The average precipitation was 0.09, or 0.56 below normal; the greatest monthly amount, 0.95, occurred at Loa; none fell at Millville and 9 additional stations, while 11 stations reported but a trace.—*L. H. Murdoch.*

Virginia.—The mean temperature was 77.8°, or 1.8° above normal; the highest was 105°, at Farmville on the 19th, and the lowest, 41°, at Burkes Garden on the 10th and 14th. The average precipitation was 3.53, or 1.18 below normal; the greatest monthly amount, 6.51, occurred at Norfolk and Sunbeam, and the least, 0.65, at Rockymount.—*E. A. Evans.*

Washington.—The mean temperature was 65.5°, or 1.1° above normal; the highest was 116°, at Lind on the 31st, and the lowest, 34°, at Wilbur on the 5th. The average precipitation was 0.68, or 0.06 above normal; the greatest monthly amount, 2.90, occurred at Clearwater, while none fell at Mottingers Ranch, Waterville, and Wenatchee.—*G. N. Salisbury.*

West Virginia.—The mean temperature was 74.7°, or 1.2° above normal; the highest was 104°, at Martinsburg on the 18th, and the lowest, 41°, at Philippi on the 10th. The average precipitation was 4.38, or 0.35 below normal; the greatest monthly amount, 7.88, occurred at Princeton, and the least, 1.72, at Beckley.—*E. C. Vose.*

Wisconsin.—The mean temperature was 68.6°, or 1.7° below normal; the highest was 100°, at Medford on the 3d, and the lowest, 38°, at the the same station on the 12th. The average precipitation was 7.23, or 3.81 above normal; the greatest monthly amount, 13.35, occurred at Prentice, and the least, 4.20, at Bayfield.—*W. M. Wilson.*

Wyoming.—The mean temperature was 64.9°, or 1.5° below normal; the highest was 116°, at Bittercreek on the 12th, and the lowest, 20°, at Daniel on the 23d. The average precipitation was 1.22, or 0.07 above normal; the greatest monthly amount, 3.69, occurred at Fort Laramie, and the least, 0.06, at Basin.—*W. S. Palmer.*

SPECIAL CONTRIBUTIONS.

RECENT PAPERS BEARING ON METEOROLOGY.

W. F. R. PHILLIPS, in charge of Library, etc.

The subjoined list of titles has been selected from the contents of the periodicals and serials recently received in the library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau:

Symons's Monthly Meteorological Magazine. London. Vol. 35.
- **Archibald, D.** Indian Famine-causing Droughts and their Prevision. (Concluded.) P. 81.
- **Dines, W. H.** Meteorological Extremes. III. Wind Force. P. 85.

Annalen der Physik. Leipzig. 4te Folge. Band 2.
- **Elster, J. und Geitel, H.** Ueber Elektricitätszerstreuung in der Luft. P. 425.
- **Toepler, M.** Ueber die Abhängigkeit des Charakters elektrischer Dauerentladung in atmosphärischer Luft von der dem Entladungsraume continuirlich zugeführten Elektricitätsmenge, nebst einem Anhange zur Kenntnis der Kugelblitz. P. 560.

Archives des Sciences Physiques et Naturelles. Genève. 4 Période. Tome 10.
- **Richter, E.** Les variations périodiques des glaciers. 5me rapport, 1899, rédigé au nom de la Commission internationale des glaciers. P. 26.

Ciel et Terre. Bruxelles.
- **Ridder, P. J. de.** Du retour probable des périodes orageuses. P. 222.
- —— Variations du climat aux époques géologiques. P. 226.

Comptes Rendus. Paris. Tome 131.
- **Marey.** Des mouvements de l'air lorsqu'il rencontre des surfaces de différentes formes. P. 160.
- **Janssen, J.** Sur l'Observatoire du Mont Etna. P. 317.

Nature. London. Vol. 62.
- **Roberts, J. E.** Remarkable Hailstorm. P. 341.
- **Townsend, J. S.** Conductivity produced in gases by the motion of negatively charged Ions. P. 340.
- **Aitken, John.** Atmospheric Electricity. P. 366.

Proceedings of the Royal Society. London. Vol. 66.
- **Dickson, H. N.** Circulation of the Surface Waters of the North Atlantic Ocean. P. 484.

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- **Mawley, E.** Report on the Phenological Observations for 1899. P. 113.
- **Scott, R. H.** Results of Percolation Experiments at Rothamsted, September, 1870, to August, 1899. P. 139.

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- **Ormond, R. T.** Temperature Observations in Somaliland and Abyssinia. P. 490.
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- **Jacob, E.** Die Rolle der Gravitation in der Aviatik. (Schluss.) P. 111.

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- **Wolfer, A.** Provisorische Sonnenflecken-Relativzahlen für das II Quartal 1900. P. 335.
- **Chabot, J. J. Taudin.** Die grüne Strahlung. P. 335.

MEXICAN CLIMATOLOGICAL DATA.

Through the kind cooperation of Señor Manuel E. Pastrana, Director of the Central Meteorologic-Magnetic Observatory, the monthly summaries of Mexican data are now communicated in manuscript, in advance of their publication in the Boletin Mensual. An abstract, translated into English measures, is here given, in continuation of the similar tables published in the MONTHLY WEATHER REVIEW since 1896. The barometric means have not been reduced to standard gravity, but this correction will be given at some future date when the pressures are published on our Chart IV.

Mexican data for July, 1900.

Stations.	Altitude.	Mean barometer.	Temperature. Max.	Temperature. Min.	Temperature. Mean.	Relative humidity.	Precipitation.	Prevailing direction. Wind.	Prevailing direction. Cloud.
	Feet.	*Inch.*	° *F.*	° *F.*	° *F.*	%	*Inch.*		
Durango (Seminario)	6,243	24.03	93.2	50.0	69.6	63	9.78	wsw.	e.
Leon (Guanajuato)...	5,934	24.27	87.1	55.4	69.3	68	6.79	sse.	se.
Mazatlan	25	29.84	90.7	74.8	83.5	77	10.88	nw.	ne.
Mexico (Obs. Cent.)..	7,472	23.04	81.3	51.3	62.2	71	5.79	n.	ne.
Morelia (Seminario)..	6,401	23.95	77.4	53.6	64.2	81	5.63	sw.	e.
Puebla (Col. Cat.)....	7,112	23.36	79.7	49.1	65.5	77	9.03	e.	ne.
Saltillo (Col. S. Juan).	5,399	24.77	87.8	59.0	71.6	71	5.70	n.	se.
Zacatecas	8,015	22.49	80.6	47.8	62.6	60	11.69	e.	
Zapotlan (Sem.)......	5,078	25.07	82.0	61.2	69.4	76	5.20	sse.	se.

OBSERVATIONS AT HONOLULU.

Through the kind cooperation of Mr. Curtis J. Lyons, Meteorologist to the Government Survey, the monthly report of meteorological conditions at Honolulu is now made partly in accordance with the new form, No. 1040, and the arrangement of the columns, therefore, differs from those previously published.

Meteorological observations at Honolulu, July, 1900.

The station is at 21° 18' N., 157° 50' W.

Hawaiian standard time is 10h 30m slow of Greenwich time. Honolulu local mean time is 10h 31m slow of Greenwich.

Pressure is corrected for temperature and reduced to sea level, and the gravity correction, —0.06, has been applied.

The average direction and force of the wind and the average cloudiness for the whole day are given unless they have varied more than usual, in which case the extremes are given. The scale of wind force is 0 to 12, or Beaufort scale. Two directions of wind, or values of wind force or amounts of cloudiness, connected by a dash, indicate change from one to the other.

The rainfall for twenty-four hours is measured at 9 a. m. local or 7:31 p. m. (not 1 p. m.), Greenwich time, on the respective dates.

The rain gage, 8 inches in diameter, is 1 foot above ground. Thermometer, 9 feet above ground. Ground is 43 feet, and the barometer 50 feet above sea level.

Date.	Pressure at sea level.	Temperature. Dry bulb.	Temperature. Wet bulb.	During twenty-four hours preceding 1 p. m., Greenwich time, or 2:29 a. m., Honolulu time. Temperature. Maximum.	Temperature. Minimum.	Means. Dew-point.	Means. Relative humidity.	Wind. Prevailing direction.	Wind. Force.	Average cloudiness.	Sea-level pressures. Maximum.	Sea-level pressures. Minimum.	Total rainfall at 9 a. m., local time.
	*	†	†			‡	‡		§				
1	30.00	77	69.5	85	76	.....	.....	ne.	4-5	5	30.02	29.96	0.01
2	30.00	76	69.5	86	76	65.7	62	ne.	4-2	5	30.04	29.97	0.03
3	29.97	73	69.5	85	75	66.7	66	ene.	3-1	4-8	30.01	29.96	0.13
4	29.97	72	69	84	71	68.5	75	ne.	3	3-8	30.01	29.94	0.07
5	29.98	75	69	85	75	69.5	79	ene.	3	5	30.02	29.95	0.15
6	29.96	74	69	85	71	67.3	69	ne.	3	6	30.02	29.94	0.08
7	29.98	76	69	85	70	67.3	69	ne-nne.	4	4	30.00	29.94	0.00
8	30.00	77	69	86	75	66.3	65	nne.	3	3	30.00	29.96	0.01
9	30.03	76	68	85	76	66.5	66	ene.	4	3	30.04	29.99	0.00
10	29.94	72	70	86	75	65.5	64	nne.	3	3-1	30.05	29.95	0.41
11	29.91	75	70	79	71	69.0	79	ne.	3	8-4	29.99	29.91	0.19
12	29.95	74	67.5	84	72	66.7	69	ne.	4	3	29.98	29.93	0.04
13	29.96	75	69	85	73	66.0	66	ne.	2	5	29.99	29.94	0.06
14	29.93	75	68.5	84	72	67.7	72	ne.	3-0	3-8	29.97	29.92	0.14
15	29.91	72	69	85	70	67.3	69	ne.	1	4	29.97	29.93	0.01
16	29.90	76	69.5	86	72	67.5	71	ne.	1	3	29.97	29.87	0.01
17	29.92	75	68	86	74	65.7	63	ne.	1-3	2	29.95	29.88	0.00
18	29.97	75	68.5	86	74	66.5	60	ne.	1-3	2	30.00	29.92	0.09
19	29.97	77	71	86	72	69.0	65	ne.	3	8-3	30.06	29.97	0.05
20	29.93	72	68	86	76	67.7	60	ne.	3	5-1	30.01	29.92	0.02
21	29.86	70	66	86	79	65.0	68	nne.	3-4	1	29.97	29.86	0.01
22	29.90	73	68.5	87	68	65.7	66	nne.	2	2	29.93	29.86	0.00
23	29.92	77	69	86	72	64.5	62	ne.	3	2	29.97	29.90	0.00
24	39.95	77	69	86	76	66.0	63	ne.	4	4	29.99	29.93	0.00
25	29.94	76	69.5	86	76	65.5	62	nne.	4	2	29.98	29.90	0.04
26	29.93	73	68.5	85	74	65.3	63	ne.	4	3	29.95	29.89	0.36
27	29.93	76	69.5	83	70	68.0	75	ne.	4-0	5	29.97	29.91	0.15
28	29.93	76	71	87	72	67.0	66	ne.	3-0	2	29.99	29.91	0.00
29	29.94	77	73	88	75	69.7	72	ene.	3	4-6	30.00	29.94	0.16
30	29.94	76	72.5	87	75	70.5	72	ne.	3	4-2	29.98	29.92	0.04
31	29.94	75	71	86	76	69.7	73	nne.	4	2	29.98	29.91	0.33
Sums..	......	......	......	......	......	......	......	....	......	......	......	......	2.59
Means.	29.947	74.9	69.3	85.3	73.0	66.9	67.5	....	2.9	3.7	29.994	29.925	....
Departure..	—.035	......	......	......	......	+3.6	+0.8	....	......	—0.3	......	......	+0.79

Mean temperature for July, 1900 (6 + 2 + 9) ÷ 3 = 78.5°; normal is 77.2°. Mean pressure for July (9 + 3) ÷ 2 is 29.960; normal is 29.995

* This pressure is as recorded at 1 p. m., Greenwich time. † These temperatures are observed at 6 a. m., local, or 4:31 p. m., Greenwich time. ‡ These values are the means of (6 + 9 + 2 + 9) ÷ 4. § Beaufort scale.

FOG STUDIES ON MOUNT TAMALPAIS.

By ALEXANDER G. MCADIE, Forecast Official

If we lived on a planet without an atmosphere, such as our own satellite, and were suddenly carried to the earth and required to specify what, of all the wonderful things seen, most excited our interest, we would be forced, in perfect fairness, to answer "the floating reservoirs—the clouds." Because we do live on a planet that has an atmosphere, and daily see the never-ending procession of aerial forms marching across the sky we are unable to rightly marvel at the clouds, though we may rightly admire the beauty of the cloudscape. We fail to realize, too, that we are living at the bottom of a sea—a sea of air and not of water. This is a deeper sea than that of the sailing ships, and soundings exceeding 5 miles have recently been made in it. Twilight indicates a sensible atmosphere of perhaps 40 miles, and some measurements of meteoric phenomena would extend the envelope of air to 100 miles; but for all practical purposes the sea of air with which man is concerned may be considered as 5 miles deep. Even so, it is an ocean more vast than the broad Pacific, the ridged Atlantic, the Arctic, the Antarctic, and all the waters of the globe combined. At the bottom of this sea men walk about unconscious of a pressure of nearly one ton on each square foot of their bodies. This pressure is not constant but varies from hour to hour and day by day, sometimes as much as one hundred pounds. Far above move those strangely plastic water carriers, the clouds, and it may be that a longing comes for the wings of a bird that we, too, might journey in the realms of the cloud. But like Prometheus bound to his rock, man seems chained below and wears out his existence at the bottom of the sea of air. Deep sea fishes are structurally adapted to withstand the enormous pressure of the superincumbent layers of water; and man, a deep air animal, is also suited for his habitat. When he wishes to change from one level to another he can laboriously climb the side of some high mountain, realizing as he toils upward that his respiratory system is adapted to low levels. With less physical effort he can rise in an artificial way by balloons, and range through levels with pressure varying from 15 to 5 pounds per square inch. Unlike the birds, however, he can not, unassisted, sound the air. He is outclassed by the eagle. Even the lazy buzzard circling slowly across the sky, soaring without effort over hill and valley, watching with sharp eye the slow-moving animals on earth, has the advantage of man.

The sea of air has even more moods than the sea of water. In the atmosphere the great disturbances are at the bottom while the upper strata are comparatively tranquil. What is called weather is for the most part a displacement of normal strata. Deflection, dipping, or underflowing of some customary air stratum by another, means a marked change in man's environment and naturally he comments freely thereupon.

Few of us realize that the atmosphere is never absolutely at rest. On the calmest day and in the most sheltered nook the air, seemingly still, will be found on closer examination to be in motion. Difference of temperature causes convectional currents, or what we may call gross motion. There are other motions, of which the layman can know but little. The president of the British Association for the Advancement of Science stated in the presidential address for 1898 that—

> The total energy of both the translational and internal motions of the molecules locked up in quiescent air at ordinary pressure and temperature is about 140,000 foot-pounds in each cubic yard of air. Accordingly the quiet air within a room 12 feet high, 18 feet wide, and 22 feet long, contains energy enough to propel a one-horse-power engine for more than twelve hours.

As seaweeds betray the set of the ocean currents, so do

clouds betray the aerial steam lines. In studying air drainage, then, let us follow closely the lines and levels of the condensed water vapor. A bank of water vapor (and the vapor is independent of the air) rests like a sediment at the bottom of our sea of air. Under usual conditions a cubic foot of air weighs about 490 grains. A cubic foot of water vapor when the dew-point is 60° weighs about 6 grains. Variation in the amount of water vapor affects man more than change in air. A warm day becomes unbearable if the humidity is high and quite pleasant if the humidity is low. Conversely, a cold day is bracing if dry and doubly disagreeable if damp. It is this water vapor which gives us fog, cloud, snow, rain, hail, frost, and ice. With the aid of fine dust, it gives the wonderful colors of sunset. Like a warm breath upon a window, it may veil the sunlight, and we then call it a cloud.

On the coast of California there is a city justly famed for the abnormalities of its climate. Overcoats and heavy wraps are worn in midsummer and the lilies bloom in December. From May until September almost no rain falls; yet during this period, with clocklike regularity, great banks of fog march in every afternoon and cover the bare, brown hills. Day after day the inhabitants of this city walk about under a sediment of water vapor, knowing that 1,500 feet above, the air is clear and 20° or 30° warmer. Truly, this is an ideal locality in which to study the formation of fog, the birth of the cloud, and to note the shifting of the strata at the bottom of the atmospheric sea. Like an immense blanket, the fog is drawn through the Golden Gate. Below the blanket, all is gray and dreary; above, all is sunshine and delightful weather.

Now, fog, whether it appears for a few hours at certain seasons, as in New York Harbor, or regularly on summer afternoons, as at San Francisco, or for weeks and months, as on the Banks of Newfoundland, indicates air motion. It is, moreover, the first reaction in the process of rain making. The murky town fog of London is seemingly far removed from the pure mists of the Scottish Highlands, and yet the underlying principle of formation is the same. Ground fog, sea fog, town fog, tule fog, and the clouds through all the levels are nature's unfinished efforts at rain making. In that vast laboratory there are many ways of warming and cooling water vapor. One level glides over another and the daintiest of lacelike cirrus clouds are formed; one current rises and another falls, and a sheet of cloud, level as a prairie, marks the plane of condensation. Aerial fleets and flocks appear and disappear as the water vapor is cooled by contact, ascension, mixture, or otherwise. (See the accompanying Plates No. I, II, and III.)

Air motion is, as a rule, initiated by difference in temperature. In the wonderful land of California, owing to peculiar topography, the temperature of the air will often differ as much as 50° in 50 miles. Especially is this the case in the vicinity of the Golden Gate, where on one side the ocean maintains a temperature of about 55°, while a few miles inland the temperature on summer afternoons may reach 110°. Here then one may expect to find well-marked air currents, drafts, and counterdrafts. Here the rain engineer should begin his studies. In the early morning after a night of fog, the city roofs glisten with little pools of water. Wherever the fog impinges on a condensing surface, the water trickles down. One side of a street is wet, the other dry. Under the trees, in the redwood canyons of the slopes of Tamalpais, the drifting fog after caressing the leaves, patters gently to the ground. A few hours earlier this water was in the Pacific; as vapor it traveled perhaps a thousand feet upward. Then settling and chilled by the cold water surface, it was carried inland as fog, and meeting in the leaf a modest but efficient rain maker, turns to water again and flows in part into the sea.

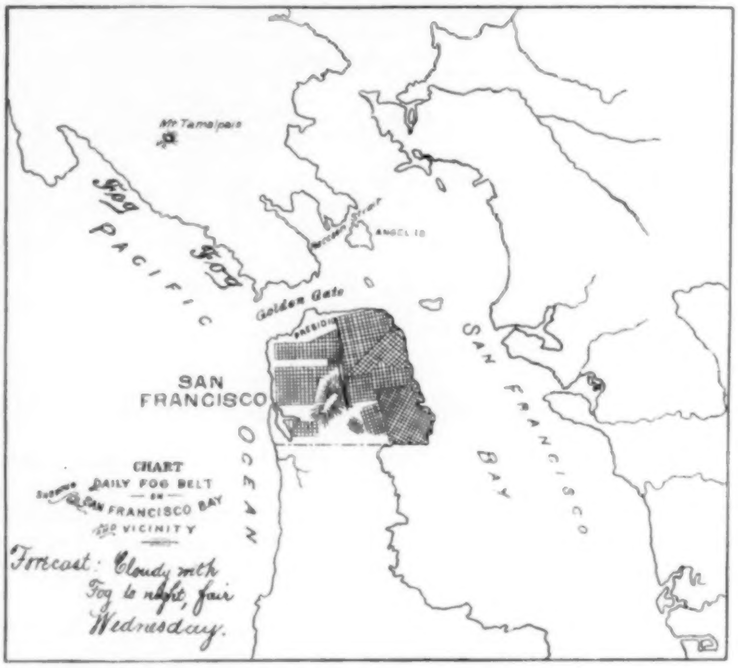

FIG. 1.—Fog service at San Francisco. Corner of large map standing in main corridor of Ferry Building. By means of frequent reports from Point Reyes and Mount Tamalpais the extent and character of fog over Drakes Bay, the roadstead, and the Gate itself are known in the city.

COMPARATIVE DATA FOR SAN FRANCISCO AND MOUNT TAMALPAIS.

In Bulletin No. 28 issued by the Weather Bureau, entitled The Climate of San Francisco, meteorological data pertaining to the City of San Francisco are given up to the beginning of 1899. It is not necessary to repeat here these records; but the data for 1899 being available possess special interest.

Year and month.	Mean monthly temperatures.	
	Mount Tamalpais.	San Francisco.
1899.		
January	47.8	53.0
February	47.6	51.6
March	44.6	52.2
April	51.6	54.6
May	51.2	52.6
June	66.8	56.9
July	71.0	55.9
August	61.4	58.3
September	73.2	58.2
October	55.3	59.3
November	49.4	56.8
December	47.7	49.6
Annual	55.6	54.9

These temperatures compared with those of 1898 show that the annual mean temperature of both stations for the two years is practically 55°, which is also the mean annual temperature, so far as we can judge from somewhat scattered data, of the ocean in the vicinity of San Francisco. The temperature of the lower station naturally approximates sea conditions throughout the year; while the departures at the more elevated station are marked in both winter and summer.

The highest temperature recorded on the mountain during the year was 96°, on July 18; the maximum temperature on the same date at San Francisco being 66°, and at Point Reyes 52°. It is worthy of note that within so short a distance as 25 miles, between Mount Tamalpais and Point Reyes, there should be a difference of 44°. The highest temperature recorded at San Francisco during 1899 was 94° on October 8, while on this date the maximum temperature on Mount

Tamalpais was 88°, and at Point Reyes 74°. The lowest temperature recorded during the year on the mountain was 23°, on February 4, and on the same date 34° at San Francisco and at Point Reyes. The minimum temperature was, therefore, 11° lower at the higher station. As has been elsewhere stated, during summer months there is very frequently, owing to the fog, a cooling of 11° at the lower station. In all of these instances the retarding influence of the water is apparent; in summer the temperature near the sea remaining cool, and comparatively warm in winter.

The mountain, as might be supposed, is the drier station, the mean relative humidity being 59 per cent, while it is 83° at San Francisco. Especially during the summer months is the difference noticeable, and, doubtless, it is this dryness which causes such an agreeable "change of climate" to visitors at this season. The difference may perhaps be stated more clearly in this way. The weight of water vapor per cubic foot varies from 1.9 grains to 3.5 grains on the mountain during the year. While at San Francisco it varies from 3.3 grains to 4.4 grains. The average hourly wind velocity seems to increase with elevation, the values for the mountain station far exceeding those of the lower station. The maximum velocities recorded are, respectively, 91 and 47. The total wind movement was 177,017 miles at Mount Tamalpais and 96,602 miles at San Francisco.

TABLE 1.—*Comparative climatic data for 1899.*

Stations.	Mean pressure.	Temperature. Annual.	Mean maximum.	Mean minimum.	Highest.	Lowest.	Mean daily range.	Mean daily change.
	Inches.	°	°	°	°	°	°	°
San Francisco	29.87	54.9	61.0	49.0	94	34	11.6	2.6
Mount Tamalpais	27.55	55.7	61.5	49.8	96	23	11.7	4.3
Los Angeles	29.61	61.9	72.7	51.0	100	33	21.7	2.6
San Diego	29.87	60.1	65.5	54.8	93	34	10.7	2.0

Stations.	Dew-point.	Humidity. Weight of vapor	Relative humidity.	Total rainfall.	Rainy days.
	°	*Grains.*	%	*Inches.*	
San Francisco	48	3.8	83	23.23	67
Mount Tamalpais	36	2.5	59	36.86	92
Los Angeles	49	3.9	73	8.69	31
San Diego	50	4.1	73	6.08	33

Stations.	Wind. Prevailing direction.	Maximum velocity.	Total movement.	Sky conditions. Clear days.	Partly cloudy days.	Cloudy days.	Actual hours of sunshine.	Percentage of sunshine.
		Miles.	*Miles.*					
San Francisco	w.	47 sw.	96,602	185	104	76	3,123	69
Mount Tamalpais	nw.	91 nw.	177,017	196	80	89	3,342	73
Los Angeles	w.	30 e.	36,590	162	167	36	3,272	74
San Diego	nw.	33 se.	50,428	280	40	45	3,174	72

The accompanying tables give in detail the meteorological elements at both stations for 1899, and a comparison of the yearly means with the same at Los Angeles and San Diego, both of which cities are considered popularly as possessing ideal climates.

TABLE 2.—*Mount Tamalpais*, 1899.

	January.	February.	March.	April.	May.	June.
Actual mean pressure	27.62	27.65	27.53	27.54	27.53	27.51
Mean maximum temperature	51.8	53.3	49.5	58.6	58.1	73.9
Mean minimum temperature	43.8	41.9	39.6	44.7	44.3	59.6
Mean monthly temperature	47.8	47.6	44.6	51.6	51.2	66.8
Highest temperature	69	71	69	77	82	86
Lowest temperature	32	23	32	32	33	41
Dew-point	34	29	36	35	35	39
Relative humidity	70	56	77	58	62	43
Total rainfall	5.92	0.28	10.38	1.69	1.70	0.29
Greatest 24-hour rainfall	1.54	0.14	2.51	0.53	1.39	0.24
Mean cloudiness	6.0	3.4	6.7	4.7	4.1	1.8
Average hourly wind velocity	24.0	23.2	22.8	19.8	22.9	19.8
Prevailing wind direction	nw.	nw.	w.	n.	nw.	nw.
Maximum wind velocity	86	84	76	84	78	86
Maximum wind direction	w.	nw.	nw.	nw.	nw.	nw.
Clear days	8	14	7	13	17	24
Partly cloudy days	9	13	7	8	9	5
Cloudy days	14	1	17	9	5	1
Days with .01 rainfall	14	4	17	7	3	3
Days with .04 rainfall	14	2	16	6	3	1
Actual hours sunshine	174.9	263.8	162.6	300.7	344.6	404.5
Percentage of sunshine	57	87	44	76	78	91
Mean daily range of temperature	8.0	11.4	9.9	13.9	13.8	14.3
Mean daily change of temperature	2.8	3.8	4.1	6.3	4.7	6.1
Total wind movement	17,821	15,608	16,986	14,234	17,074	14,257

	July.	August.	September.	October.	November.	December.	Annual.
Mean actual pressure	27.50	27.49	27.56	27.52	27.55	27.62	27.55
Mean maximum temperature	78.2	68.5	79.9	60.7	52.9	52.3	61.5
Mean minimum temperature	63.7	54.2	66.6	49.9	45.9	43.1	49.8
Mean monthly temperature	71.0	61.4	73.3	56.3	49.4	47.7	55.7
Highest temperature	96	79	92	88	61	64	96
Lowest temperature	46	45	47	37	40	34	23
Dew-point	33	39	32	37	46	41	36
Relative humidity	30	50	29	63	91	80	59
Total rainfall	0.00	0.01	0.00	4.26	7.48	4.65	36.86
Greatest 24-hour rainfall	0.00	0.01	0.00	1.32	2.51	0.83	2.51
Mean cloudiness	1.2	2.3	2.0	4.6	8.0	4.6	4.1
Average hourly wind velocity	17.6	16.5	17.1	18.2	16.7	23.9	20.2
Prevailing wind direction	nw.	w.	nw.	nw.	nw.	ne.	nw.
Maximum wind velocity	61	91	66	71	56	76	91
Maximum wind direction	n.	nw.	nw.	nw.	w.	n.	nw.
Clear days	29	24	26	16	2	16	196
Partly cloudy days	2	4	4	5	10	4	80
Cloudy days	0	3	0	10	18	11	89
Days with .01 rainfall	0	1	0	11	19	13	92
Days with .04 rainfall	0	0	0	8	15	12	77
Actual hours sunshine	445.4	373.4	354.7	234.0	105.9	177.7	3,342
Percentage of sunshine	99	88	95	67	35	60	73
Mean daily range of temperature	14.5	14.3	13.3	10.8	7.0	9.3	11.7
Mean daily change of temperature	5.9	4.7	3.4	4.2	2.1	3.1	4.3
Total wind movement	13,108	12,283	12,307	13,561	11,996	17,782	177,017

TABLE 3.—*San Francisco*, 1899.

	January.	February.	March.	April.	May.	June.
Mean actual pressure	29.98	30.00	29.89	29.87	29.87	29.78
Mean maximum temperature	58.3	58.0	57.3	61.2	58.3	63.4
Mean minimum temperature	47.6	45.3	47.1	47.9	46.9	50.4
Mean monthly temperature	53.0	51.6	52.2	54.6	52.6	56.9
Highest temperature	78	80	74	80	80	75
Lowest temperature	40	34	42	43	43	47
Dew-point	46	45	48	45	45	49
Relative humidity	80	82	86	76	79	83
Total rainfall	3.67	0.10	7.61	0.62	0.86	0.01
Greatest 24-hour rainfall	0.98	0.08	2.15	0.46	0.77	0.01
Mean cloudiness	6.7	4.6	6.5	3.0	2.6	2.0
Average hourly wind velocity	7.9	8.7	9.8	11.7	13.9	14.2
Prevailing wind direction	se.	w.	w.	w.	w.	w.
Maximum wind velocity	47	39	36	38	37	44
Maximum wind direction	sw.	w.	w.	w.	w.	w.
Clear days	5	11	6	18	21	23
Partly cloudy days	11	10	9	10	7	5
Cloudy days	15	7	16	2	3	2
Days with .01 rainfall	11	2	15	5	2	1
Days with .04 rainfall	9	1	10	3	2	0
Actual hours sunshine	152.1	215.7	192.9	327.7	365.1	382.4
Percentage of sunshine	50	71	52	88	83	86
Mean daily range of temperature	10.7	12.7	10.2	13.8	11.4	13.0
Mean daily change of temperature	2.0	3.1	2.6	4.3	2.2	3.1
Total wind movement	5,864	5,860	7,316	8,394	10,346	1,019

TABLE 3.—*San Francisco*, 1899—Continued.

	July.	August.	September.	October.	November.	December.	Annual.
Mean actual pressure	29 78	29.78	29.83	29.88	29.88	29.98	29.87
Mean maximum temperature	61.5	63.5	65.1	66.1	61.0	54.8	60.7
Mean minimum temperature	50 3	53.1	51.3	52.5	52 6	44.4	49.1
Mean monthly temperature	55.9	58.3	58.2	59.3	56 8	49.6	54.9
Highest temperature	73	78	73	94	65	63	94
Lowest temperature	48	50	48	46	48	37	34
Dew-point	50	52	52	50	52	44	48
Relative humidity	87	84	89	78	86	83	83
Total rainfall	00.0	T.	00.0	3.92	3 79	2.65	23.23
Greatest 24-hour rainfall	00.0	T.	00.0	1.94	1.51	1.17	2.15
Mean cloudiness	3.6	3.3	3.0	3.0	5.8	3.8	4.0
Average hourly wind velocity	15.3	14.4	12.6	8.5	6.6	8.6	11.0
Prevailing wind direction	sw.	sw.	sw.	w.	se.	n.	w.
Maximum wind velocity	41	39	40	41	30	30	47
Maximum wind direction	w.	w.	w.	w.	sw.	sw.	sw.
Clear days	16	18	20	21	8	18	185
Partly cloudy days	11	11	8	5	11	6	104
Cloudy days	4	2	2	5	11	7	76
Days with .01 rainfall	0	0	0	9	12	10	67
Days with .04 rainfall	0	0	0	6	11	10	52
Actual hours sunshine	294.1	308.4	292.5	272.5	129.1	190.5	312.3
Percentage of sunshine	65	73	78	78	42	64	69
Mean daily range of temperature	11.3	10.4	13.8	13 6	8.4	10.4	11.6
Mean daily change of temperature	2 1	2.0	2.2	3.4	1.9	2.3	2.6
Total wind movement	11,356	10,722	9,066	6,298	4,757	6,430	96,602

ELECTRIC PHENOMENA IN THE EUPHRATES VALLEY.

By ELLSWORTH HUNTINGTON, Euphrates College, Harpoot, Turkey, dated July 21, 1900.

During a recent ten days' geological trip through an almost unvisited part of the Taurus Mountains to the south of Harpoot I heard of a phenomenon which I should be glad to have you explain, either by letter or through the columns of the REVIEW. Before leaving Harpoot I was told by a man from Aivose that Keklujek Mountain, near his village, fought with Ziaret Mountain, on the other side of the Euphrates River. The weapons were balls of light, which the mountains threw at each other. As the region was one of volcanic activity in comparatively recent times, and as hot springs and extinct craters are still to be seen, I thought at first that this must be a traditional account of a volcanic eruption. Subsequent investigation, however, showed that the story had its origin in a meteorological phenomenon. At first I was skeptical as to the truth of what follows. After hearing substantially the same story from ten or twelve men whom I saw in five different places separated by an extreme distance of 40 or more miles, I became thoroughly convinced of its truth. It may be a common occurrence, but I have never heard of it and can find no account of it in the few books at my command.

The facts, upon which all agree, are as follows: A ball of fire is sometimes seen to start from one mountain and go like a flash to another. At the same time there is a sound like thunder. This occurs by day or by night, although by day no light is seen. It always occurs when the sky is clear and never when it is cloudy. It sometimes happens two or three times in a year, and then again is not seen for several years. For the last two years it has not been seen. It is most common (or possibly never happens except) in the fall, at the end of the long, dry season of three months. The mountains show no special features different from other mountains. I visited one of them, Karaoghlon (Black Son) Mountain, and found it to be composed of metamorphic schistose shale of cretaceous age. Its height is 7,350 feet, and the top is comparatively flat. One observer said that a glow remained after the flash, but all the rest contradicted this. Another said that the ball of fire was first small, but grew larger as it passed over, and then grew smaller again. He evidently was between the two mountains.

The location and course of the flashes may be seen from the accompanying sketch map. In every case the flash crosses the Euphrates River, which here flows through a deep, pre-

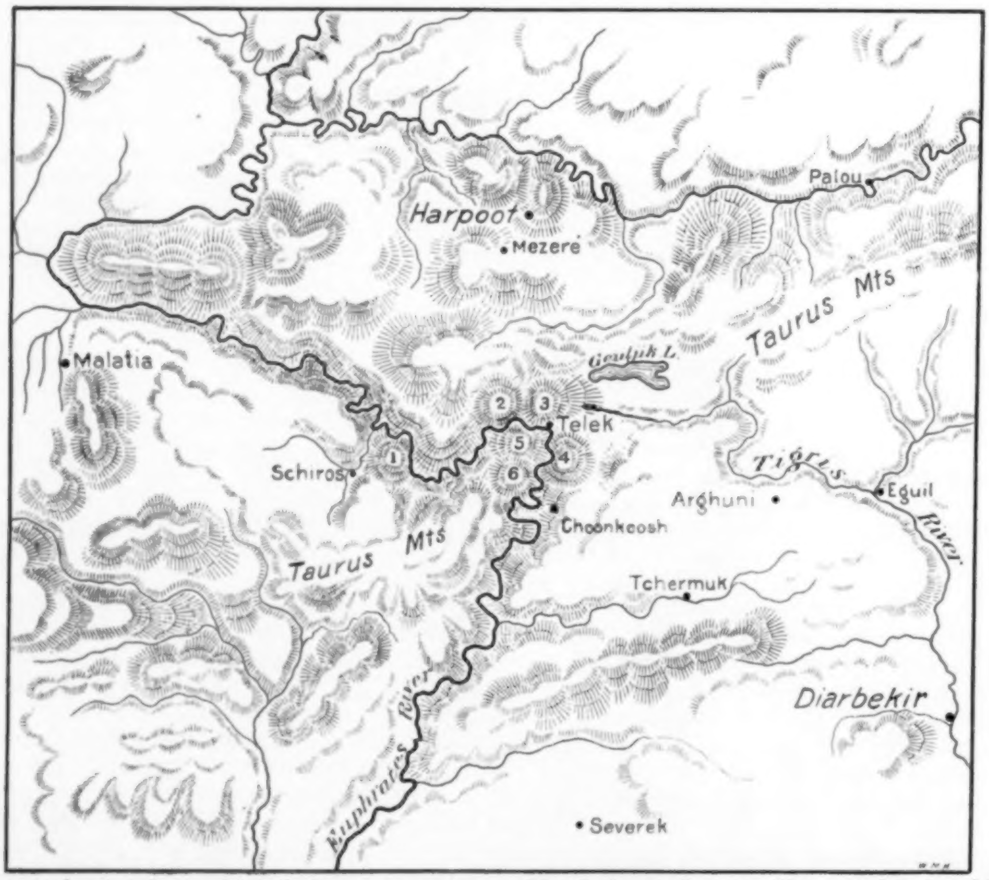

FIG. 2.—Showing mountains 1-6, from which flashes are seen to go. The flashes go between Nos. 1 and 2; 2 and 5; 3 and 5; 4 and 5; and 4 and 6. The names of the mountains are: No. 1, Chakchak, altitude 7,400 feet; No. 2. Keklujek, 6,500 feet; No. 3, Karaoghlon, 7,350 feet; No. 4, Hindi Baba, 5,500 feet; No. 5, Ziaret, 7,500 feet; No. 6, no name.

cipitous valley, at an elevation of 2,000 feet above sea level, or at from 3,500 to 5,500 feet below the tops of the mountains. The valley and the lightning seem to have some connection. I asked about other mountains, e. g., whether the flash ever went from Ziaret to Chakchak (No. 5 to No. 1), and was told that it never went except as indicated on the map. Between any two mountains of those indicated it goes indifferently in either direction. Ziaret Mountain stands out prominently and is said to be visible from all the cities named on the map, viz, Harpoot, Malatia, Arghuni, Choonkoosh, Diarbekir, Severek, and Oorfa.

In several places the people said that this lightning was seen only when Turkey was at war. Later, at Kefferdis, near Mount Ziaret, we heard the origin of this tradition. Once at a time of a war scare lightning flashed from Mount Ziaret. The people in Malatia heard the sound of the thunder. No clouds were in sight and they did not think it could be thunder. So they said: "The Russians are coming; we hear their guns."

If you or your readers have heard of similar phenomena in any part of the world, may I ask for information in regard to the conditions and causes?

SUDDEN DISAPPEARANCE OF ICE ON THE LAKES.

By H. H. TEN BROECK, Braidentown, Fla.

On page 114 of the MONTHLY WEATHER REVIEW for March, 1900, is a note on the sudden disappearance of ice from lakes in the spring. While living in Wisconsin I noted this phenomenon, and was told the usual explanation, namely, that the ice got rotten and sank. Knowing this to be irrational, I examined the matter and at once found out the cause. After a period of thawing weather the upper surface of the ice becomes a mass of sharp points, still hard and clear, and 6 or 8 inches thick, and capable of bearing one's weight, apparently as strong as ever. But each of the sharp points is the end of a crystal of ice, extending through the mass. As the disintegration of the ice proceeds the crystals become more distinct in their formation until the whole mass gives way. The crystals separate from each other and float on their sides as a loose mass of small pieces which rapidly melt. In shallow water the process is quicker than in deep water, as I found out once in crossing a lake. Where I got on the ice the lake water was deep, the ice dark and solid, though the surface was covered with the sharp points. On reaching the other side, where the water was three or four feet deep, the ice was of a light green color, and when I stepped on it the ice broke up into separate crystals under me, or rather around me, and I at once went through. Within a few hours after the deep-water ice became disintegrated and soon melted. The mystery of the sudden disappearance of the ice is simply due to the sudden change of its particles, since the warmth breaks up the solid mass into separate small crystals. But none of these are rotten—they are clear and solid, and float on the surface of the water as long as a piece is left.

METEOROLOGICAL NOTES FROM PORTO RICO.

By R. M. GEDDINGS, Section Director, dated San Juan, Aug. 9, 1900.

It has been frequently noticed, at least in San Juan, that while thunderstorms are numerous, though not severe, they nearly all present the following peculiarity, viz: That rarely does the lightning precede the rain. Frequent heavy showers occur with no accompanying thunder, which is only heard after the rain has nearly ceased. The matter has been looked up, but no explanation which could fit the case was found until the article in the April MONTHLY WEATHER REVIEW, entitled "The formation of large rain drops," was received. In this article appears the following paragraph:

> There is some plausibility in the hypothesis that the critical electrical condition, which results in lightning, is directly due to the disruption of the condition of extreme supersaturation and the sudden formation of large drops of water.

May not this explain the phenomenon? I must confess that attention was not called to this before, because I was afraid that I might be asserting something which was already well known, but the paragraph referred to, showing the matter to be still under investigation, emboldens me to call attention to it. It had, up to this time, been thought to have something to do with the liberation of latent heat.

There is another thing to which I should like to call attention, but this is referred to in Davis' meteorology (page 193), and that is the lowering of the relative humidity in the eye of a cyclone. While no center has passed directly over this station during the past year, it was noticed during the last hurricane season that this happened about twenty-four to forty-eight hours in advance of the storms which passed near this island. Attempts have been made to prove this by tabulation, but the results have not been altogether satisfactory, for sometimes it occurred but slightly and sometimes not at all, but it is thought that a series of observations taken at close intervals would prove the fact. The hurricane of San Ciriaco occurred here last year on August 8. At 8 p. m. of the 6th the relative humidity was 73°, and at 8 a. m. of the 7th it was 68°, the preceding morning showing 74°. On the 30th of August a hurricane passed to the south of the island, the record being as follows:

Date.	Relative humidity.	
	a. m.	p. m.
Aug 1899.	%	%
27	73	80
28	72	75
29	75	86
30	77	87
31	71	98

Very little can be learned from this record, the drop being very slight.

On September 8 and 9 a hurricane passed to the northeast of the island, the record being as follows:

Date.	Relative humidity.	
	a. m.	p. m.
Sept 1899.	%	%
6	83	78
7	82	76
8	82	77
9	85	80
10	73	78

This again proves very little. The opportunity for investigation has been very slight, as only one hurricane passed very near the station during the past year, but, as before stated, I believe the fall in relative humidity to be a very valuable sign of the approach of a hurricane.

FORECASTING FOR THE FARMER.

By C. D. REED, Observer, Weather Bureau, dated August 21, 1900.

Recent instructions from the Chief of the Weather Bureau place the character of forecasts more nearly in the hands of the local forecaster. Such features may be included as, in the judgment of the forecast official, will be of the greatest local value. The forecast becomes desirable in proportion as it covers all local conditions in its territory.

With the increased facilities for distribution which rural free delivery of mails is bringing about, a new field of usefulness is being opened to the forecaster. In order to cover this field, he will have to acquire information hitherto unnecessary concerning the different branches of agricultural industry.

Among the items that would be of great value to farmers would be a knowledge, twenty-four to thirty-six hours in advance, of the moisture conditions of the atmosphere irrespective of precipitation; that is to say, the relative humidity. Such a knowledge might in many instances be of more service than a knowledge of the possibility of rain. The moist condition could be predicted with certainty over large areas, while rainfall might be restricted to small and widely scattered localities. This kind of forecasting would of course be most useful in sections where agriculture is most practised, such as the Mississippi, Ohio, and lower Missouri valleys, and where road improvement will advance so as to make rural free delivery possible, without which this class of forecasting would be practically useless. Of course many problems present themselves in distribution of forecasts by this method.

Agricultural instruction is spreading throughout the region referred to by means of the agricultural press and the Government experiment stations. Many thousands of farmers are already well informed concerning the various relations of soil, air, sunshine, and rainfall to agricultural operations. Many a farmer knows that it is not the best time to cut hay when there is a south or southeast wind, even when the sky is clear and there is little prospect of rain; for by practical observation he has learned that the drying process will often be so slow that the rainy conditions may overtake him before the hay will be fit to put in stack or barn, and that having been even wilted the hay is much more susceptible to injury from rain. He has learned, too, from the school of experience that he can cut hay just before a hard rain of considerable duration; provided that the rain is followed by a considerable period of dry northwest wind and clear sky, and that he has the improved implements necessary to handle hay in that condition. Many a time the only thing that he lacks, to enable him to make use of a threatening day, is to know the probable drying conditions for thirty-six hours following. If this were known he could often go out between showers on a cloudy and showery day, when the hay would not wilt much, and do cutting that would otherwise consume valuable time. Then, again, if the farmer could have some assurance of continuous drying conditions for a considerable time, he would venture upon wholesale methods in haying. Much that has been said about haying will apply with equal force to the grain and corn fodder harvest.

While drying weather is not hoped for during harvest time, the reverse is true at any subsequent time when it becomes necessary to move fodder or hay from place to place. On a dry day the leaves, which are the most nutritious and palatable part of the plant, are badly shattered and lost. Clover hay will sometimes lose so much in this way as to become nearly worthless as a fodder for sheep and of much decreased value for other animals. It is even better to shred or chop the hay or fodder on a damp day, and then overcome the heating tendency which it develops when stored in large bulk by alternating layers of straw with the cut fodder to absorb the moisture, rather than to run the risk of loss on a dry day. This principle will not hold good in baling hay or shredded fodder, for in this case heating and mildewing will frequently result if the work is done on a damp day.

As all of these operations require planning and arranging by the farmer for several days ahead, it is very evident that a foreknowledge of the moisture conditions of the air would be very helpful. Most any experienced farmer, by reason of his years of observation, can predict the more prominent features of the weather with fair certainty. He knows, for example, that in his locality a steady southeast wind is damp and that a steady northwest wind is dry, but he can not always tell thirty-six hours in advance from which direction the wind will blow; neither does he know of the drying power nor the duration of an area of high barometer, with its calms and variable winds. It is within the power of the forecaster to transmit this information.

The general forecasts as now issued frequently contain information of the wind direction, and should do so always; but since this does not carry with it the whole story of moisture conditions, and since there are many people directly concerned who do not fully understand the moist and dry attributes of wind from different directions, much amplification would result from the addition of such terms as "more moisture," "less moisture," "moisture stationary," or something similar.

Only a few instances of the usefulness of this kind of forecasting have been cited, but they show that there is a demand for such work. Doubtless tobacco curers, raisin growers, many manufacturers and others would be benefited.

THUNDERSTORMS NEAR WASHINGTON.[1]

By Messrs. H. W. and H. S. CRAGIN.

Mr. H. W. Cragin writes as follows:

"August 6.—The season has been very dry. From my observation I do not think the showers passing over the Blue Ridge go far to the east or northeast. Sometimes I see showers far to the north or northwest, which seem to reach the ridge. We can not see the east or northeast unless we go to the top of Stony Man Mountain, about 500 feet above our camp and about a mile northeast of it. This peak is supposed to be 90 miles in an air line from the Washington Monument, which it is said has been seen when the air is very clear by the aid of a powerful glass. To the west our view is unobstructed as far as the eye can reach. Most of the showers observed form west of the Massanutton Range, which separates Page Valley on the east from the Shenan-

[1] In the MONTHLY WEATHER REVIEW for 1898, pages Nos. 256, 317, 360, and 465, the Editor has considered the difficulty of making predictions of the arrival of local storms at the City of Washington, even a few hours in advance, owing to the want of a sufficiently close network of telegraph and telephone stations. The most obvious remedy for this defect is the establishment of stations on elevated points, such that each observer may command a satisfactory view of the occurrence of storms within a radius of 20 miles. Although a few such stations would seem to command the situation satisfactorily, yet, they would be expensive because the whole time of the observer would, necessarily, have to be devoted to the careful observation of all visible thunderclouds. On the other hand, by utilizing the operators at telegraph and telephone stations we should ask for only a minute of time in order that each may send to the Central Office word that the first thunder is heard, or the first rain has fallen. The study of local storms in the United States always impresses one with a realization of the sparsity of inhabitants in this country as compared with Europe. We can rarely find an observer for every 50 square miles in the regions where they are most wanted.

Under these conditions an especial interest must attach to such detailed reports of thunderstorms and weather as we have received from Mr. H. W. Cragin and his son, Mr. H. S. Cragin, residents of Washington, D. C., who send us a very full report from their summer residence near Skyland, Page County, Va. The camp occupied by them is about ninety miles in a straight line from the Washington Monument, which it is said, has been seen by some from that place. The camp is about 500 feet below and a mile southwest of the top of Stony Man Mountain, the altitude of whose summit is 4,032 feet, according to the United States Geological Survey. It is 12 miles east of New Market Gap in the Massanutton Range, which is often referred to as "The gap." The details of the observations made at this place during July and August will have special interest in connection with the great area of high pressure and long-continued drought, with cloudless skies, that has prevailed throughout the Middle and South Atlantic States.—ED.

doah Valley on the west. Luray is about eight miles west of us. The temperature here during the hot wave is from 12° to 14° lower than at Washington. Stony Man Mountain is about as high as any elevation of the Ridge, excepting Roan Mountain, N. C., if I am correctly informed."

"August 10.—The season is remarkably dry, and we are somewhat in fear that all but one of our springs will fail us. Since the very light precipitation of the 29th ultimo we have had nothing. During this hot wave the humidity here seems small. Next year I hope to have a barometer, wind and rain gage. I think there is much here in ordinary seasons to interest an observer. The Alleghenies are in the range of vision to the west, and any change in the lower Lake region or the Ohio Valley quickly reaches here. The down draft of an eastern current of air into the Page Valley, which often begins about 6 p. m., interests me. I have thought it to be usually caused by the rising of the hot air in the valley, which would naturally draw down the cooler air under it, but I do not think the latter (east current) reaches far into the valley, but shall inquire. When rain comes from the east it is usually accompanied by mist, and sometimes lasts for three days. We have had no storm from that direction since June 15 to 20, which is quite unusual. The apple crop to the west of the ridge is said to be small; to the east conditions are better. The chestnut yield will be a failure. I notice that the foliage of all varieties of trees is not as thick as last year on the ridge. There is not that difference in the minimums of temperature between this place and Washington that I should expect between midnight and 6 a. m. During warm waves I sometimes notice a warm current of air coming over from the east side of the ridge before the sun rises. We shall take pleasure in sending a report for August."

DAILY RECORD BY MR. H. S. CRAGIN.

Stony Man Peak, in the immediate vicinity of this camp, is supposed to be 4,032 feet above sea level, and the camp is said to be somewhat over 3,500. New Market Gap is almost directly west of here, and it is in the neighborhood of this place that most of the storms develop. They generally form to the west or northwest of the gap, sometimes as far as the North Mountain, and drift in a northeasterly direction down the Shenandoah Valley. If the shower starts in the gap to the south of it, it is likely to move easterly and pass over this camp. I am sorry to say that I am not able to make any observations to the east of the ridge, as that section of the country is completely hidden from view. Apparently the only showers that do occur to the east cross over from the west. It is a very rare thing for a storm to start either in or to the east of the mountains. Sometimes, though seldom, a storm starts in these mountains far to the south of here and drifts easterly. The storms that I spoke of as moving down the Shenandoah Valley sometimes cross the Blue Ridge 20 miles or more to the north of here.

I make all these observations from the camp, and, as the showers are very deceptive in their movements, I fear that this report is not as accurate as I would like it to be.

July 1.—8 a. m., 50°; 2 p. m., 67°; 8 p. m., 60°. Fair; fresh northwest winds, diminishing at night.

July 2.—8 a. m., 60°; 4 p. m., 70°; 8 p. m., 63°. Fair; fresh southwest, shifting at 4 p. m. to east, and becoming fresh during the night. It grew warmer during the night.

July 3.—8 a. m., 72°; 4 p. m., 81°; 8 p. m., 72°. Partly cloudy; fresh southwest winds. A belt of light showers developed about 1 p. m. to the west of camp and drifted across Stony Man Ridge toward the northeast.

July 4.—8 a. m., 72°; 4 p. m., 82°; 8 p. m., 72°. Fair; fresh southwest wind. A shower, with but little thunder, between 1 and 2 p. m.; it formed 3 or 4 miles to the north of the gap (New Market Gap, which is about 12 miles west of camp) and moved off east crossing our ridge to the north of camp.

July 5.—8 a. m., 71°; 3 p.m., 83°; 10 p.m., 73°. Between 4 and 5 p. m., a shower formed in the Shenandoah Valley, extending several miles to the north and south of the gap. Between 8 and 9 p. m. another shower had developed to the south of the gap. Both of these dissipated almost where they formed.

July 6.—8 a. m., 70°; 4 p. m., 83°; 12 p. m., 71°. Fair, with fresh southwest winds. About 7 p. m., a belt of dark clouds formed far to the west and extended far to the north of camp. During the night west winds increased and the hot wave was somewhat broken.

July 7.— ——; ——; ——. Partly cloudy; fresh west winds. About 12 a. m. (noon?) a shower formed to the south of camp and moved eastward.

July 8.—8 a. m., 68°; 1 p. m., 76°; 9 p. m., 68°. Partly cloudy, with high west winds. About 1 p. m. a shower without thunder formed 2 miles to the north of camp and moved east. During the night the hot wave was broken.

July 9.—9 a. m., 58°; 3 p. m., 66°; 11 p. m., 56°. Partly cloudy; high northwest wind.

July 10.—8 a. m., 56°; 3 p. m., 70°; 8 p. m., 56°. Fair; light northwest, shifting to east, winds at night

July 11.—8 a. m., 70°; 2 p. m., 79°; 8 p. m., 70°. Fair; southwest, shifting to east, winds at night.

July 12.—8 a. m., 68°; 3 p. m., 77°; 8 p. m., 64°. Partly cloudy, with showers in the afternoon; brisk southwest winds. Between 2 and 3 p. m. a belt of showers formed to the north of the gap. Between 3 and 4 p. m. these extended 20 miles to the north of the gap. The storms were severe, and they moved east-northeast, crossing our ridge between 4 and 5 p. m.

July 13.—8 a. m., 56°; 3 p. m., 68°; 8 p. m., 60°. Fair; fresh northwest to north winds.

July 14.—8 a. m., 63°; 3 p. m., 72°; 8 p. m., 65°. Fair; southwest winds.

July 15.—8 a. m., 70°; 2 p. m., 82°; 9 p. m., 73°. Fair; light south winds.

July 16.—8 a. m., 74°; 3 p. m., 86°; 10 p. m., 77°. Fair; winds south, shifting to brisk southeast at night.

July 17.—8 a. m., 74°; 3 p. m, 86°; 10 p. m., 76°. Fair and warm, with south, becoming east, winds at night.

July 18.—8 a. m., 72°; 3 p. m., 87°; 8 p. m., 74°. Fair, continued very warm; south winds.

July 19.—8 a. m., 72°; 3 p. m., 81°; 8 p. m., 76°; 9 p. m., 64°. Partly cloudy and not so warm, with showers in the afternoon and night; fresh southwest to west winds. At 2 p. m. a thundershower formed to the west of here in the Shenandoah and moved northeast down that valley. About 5 p. m. a shower formed near Luray and moved down the Page Valley, while at the same time a shower crossed the Blue Ridge to the south of here a few miles, moving in a northeast direction. At 8 p. m. a heavy thundershower formed to the south of the gap, crossed the Page Valley, passed over camp, and disappeared to the east of the ridge about 9 p. m.

July 20.—8 a. m., 69°; 1 p. m., 79°; 8 p. m., 72°. Fair, with moderate temperature and south winds in a. m. During the afternoon and night showers occurred in the Shenandoah Valley to the north and south of the gap, but dissipated without moving.

July 21.—8 a. m., 70°; 2 p. m., 83°; 8 p. m., 78°. Fair and slightly warmer; fresh southwest winds.

July 22.—8 a. m., 64°; 3 p. m., 73°; 8 p. m., 67°. Generally cloudy, with showers and cooler. About 5 a. m. a spiteful shower with but little rain passed over camp. About 8 a. m. a thunderstorm formed near the gap (New Market Gap 12 miles west of camp) and moved northeast down the Page

Valley crossing the Blue Ridge a little to the north of here. Showers occurred about here from 5 till 8 p. m., but could not see them on account of fog.

July 23.—8 a. m., 69°; 2 p. m., 77°; 10 p. m., 62°. Partly cloudy in a. m., with showers in p. m. From 5 till 7 p. m. a succession of ill-defined showers moved down the Shenandoah Valley. Fog obscured many of their movements; east winds prevailed.

July 24.—8 a. m., 66°; 2 p. m., 75°; 8 p. m., 68°. Partly cloudy, with moderate temperature and southeast winds. About 4 p. m. a shower developed to the south-southwest of here and moved north-northeast down the Page Valley. It was a light shower, with no thunder.

July 25.—8 a. m., 70°; 2 p. m., 79°; 8 p. m., 66°. Partly cloudy and slightly warmer, with east winds. It turned cooler at night. About 4 p. m. a shower with some thunder formed to the south of the gap and moved northeast with great rapidity, crossing the ridge immediately to the south of here; the northern edge passed over camp.

July 26.—8 a. m., 62°; 3 p. m., 68°; 8 p. m., 65°. Rain and fog in a. m., fair in p. m.; light south winds.

July 27.—8 a. m., 61°; 3 p. m., 69°; 8 p. m., 65°. Partly cloudy, with brisk east winds in a. m.; east winds diminished, with fair weather in p. m.

July 28.—8 a. m., 63°; 3 p. m., 73°; 10 p. m., 64°. Fair; north to northeast winds.

July 29.—8 a. m., 64°; 2 p. m., 71°; 10 p. m., 64°. Fair in morning. Increasing cloudiness, with rising southeast winds in p. m. Light rain fell in the night.

July 30.—8 a. m., 64°; 3 p. m., 78°; 8 p. m., 68°. Cloudy in early morning, clear during the day; southwest winds prevailed, with slightly warmer weather. About 4 p. m. a shower formed to the north of the gap and passed southeast over camp, after which it dissipated.

July 31.—8 a. m., 68°; 3 p. m., 81°; 8 p. m., 69°. Partly cloudy and quite warm, with fresh southwest winds.

The gap spoken of is New Market Gap, 12 or more miles west of this place. Since June 16 the lightning has struck three times at this place, within an area of 100 acres, seemingly attracted by the wire fencing. The drought in the Page Valley was broken on July 19, but rain is very much needed now in this region. The general trend of thundershowers is down the Shenandoah Valley, or northeastward toward of Riverton.

NOTES BY THE EDITOR.

ELECTRIC PHENOMENA IN THE EUPHRATES VALLEY.

On page 286 we publish an interesting letter from Mr. Ellsworth Huntington relative to lightning flashes passing between several of the mountain peaks bordering the wild gorge of the Euphrates 20 or 30 miles south of Harpoot (Charput). The Editor has endeavored to find a satisfactory map of this gorge, on which to locate the peaks referred to by Mr. Huntington, but the best that he has access to fails to mention them. He has, therefore, published with Mr. Huntington's article a copy of a portion of Kiepert's map of Asia Minor as reprinted in Petermann's Mitteilungen, Ergänzungsband 4, 1867, the latest edition of this map being inaccessible to him. On this map (see page 286) the reader will perceive the gorge or canyon, that extends, with many rapids and falls, for 40 miles above Telek and 20 miles below that place. The locations of Mr. Huntington's peaks and of other points given on his sketch have been transferred to this map as well as we were able to do. On either side of the gorge the country is an elevated plateau, 5,000 feet above sea level. The peaks numbered and named by Mr. Huntington are undoubtedly the remnants of the harder rocks left by the river as it cuts its channel deeper and deeper. The Lake Geuljik is believed to have an underground outlet and to be the head water of the great spring north of Telek, at which the river Tigris begins.

We need not apologize for refraining from attempting to find the correct explanation of the mysterious lightnings and thunders here recorded. It is well known that lightning passes between cloud and cloud or cloud and earth, but we have not yet any well authenticated case of its passing from peak to peak, although the poets describe it as "leaping from crag to crag." Byron is quite true to nature when he (in Childe Harolde, Canto III, stanza 92), describing a thunderstorm on Lake Leman, says:

> Far along
> From peak to peak, the rattling crags among,
> Leaps the live thunder.

There are peaks in the Rocky Mountains on which almost continuous electric discharges have been observed, but they pass off into the air quietly, like St. Elmo's fire, never in great flashes from peak to peak. During eruptions of Vesuvius, the lightning passes from the mountain to the clouds of steam that have risen from the volcano, but not between neighboring peaks. In general, the air ordinarily offers such a resistance to the passage of electricity, while the earth is such a good conductor of electricity, that it would be easier for two electrified peaks to discharge through the earth than through the air. We can not, therefore, think of a lightning flash passing between two neighboring peaks. On the other hand, a cloud or a mass of electrified air that has not quite attained the cloudy condition may lie between two peaks, and flashes may proceed from it simultaneously to the two peaks in such a way as to lead a careless observer to say that one peak discharged over to the other. If this is the approximate explanation of the Euphrates phenomenon, then it will happen only when the wind is in certain directions, such as to cause the formation of an incipient cloud and thunderstorm between the two peaks, and this wind direction will depend upon the relation of the peaks to the course of the river valley below. But when we remember how easily myths spread and become common property, so that the same error is believed by everyone, generation after generation, until some scientific investigator probes it to the bottom and dispels the illusion; when we remember that Asia Minor has been the nursery for all the myths and wonders and miracles that fill the literature of Arabia, Greece, Rome, and modern Europe; when we remember that Mr. Huntington has not seen this phenomenon, but describes it on the authority of numerous credible natives, who state that it was seen by others years ago, we must be allowed to express the wish that he will continue his researches in that neighborhood until he has seen it and can describe it from personal experience. If it is a thunderstorm phenomenon, it can not be so very rare; but if it is a myth, based upon some historical event or some misinterpretation of ancient names, the explanation will be most interesting to students of history and philology.

NOTABLE LIGHTNING.

In connection with the preceding note Mr. Heiskell, of the Weather Bureau, sends the following description of two interesting cases of lightning:

During the evening of Sunday, August 26, 1900, while near Gapland, Md., on the east slope of the Blue Ridge Mountains (12 miles north of Weverton) I saw a most beautiful display of lightning without thunder; the flashes appeared in the southwest corner of the valley known as Middletown Valley, followed the Potomac River and mountains on the Virginia side, then passed to the Blue Ridge at Weverton and followed the mountain top, making a circuit of at least 60 miles, this appeared to occur twice, when gradually the flashes spread, as it were, to the valley, in appearance resembling the discharge of a roman candle. This most beautiful phenomenon lasted from about 7 to 10:30 p. m., and when near the house the light was so vivid that at times one could easily have read a book. An old resident remarked that whenever they had such "lightning storms" it purified the air, and the next day was always bright and clear.

This display of lightning without thunder recalls a thunderstorm that occurred several years ago in the Blue Ridge Mountains in the month of July. I was on a train going to Emmitsburg, Md.; when we changed cars at Rocky Ridge, the sky was heavily overcast with large cumulo-nimbus clouds. As we moved along by the side of the mountain, about 1 mile distant, a terrible thunderstorm, accompanied by high wind, burst before us. The lightning was so vivid as to be nearly blinding, and as the storm or clouds followed the mountains the lightning appeared to those on the train to leap from peak to peak, in fact several persons remarked "that mountain must be full of iron." The storm passed off over Emmitsburg and the sun came out as bright and hot as before.

THE FRENCH EDITION OF THE MONTHLY WEATHER REVIEW.

The publication of the MONTHLY WEATHER REVIEW, which began with the number for January, 1873, compiled by the present Editor, was soon recognized as an important means of bringing before the world a general summary of the work done by the Weather Bureau, at that time a part of the Signal Service. The enlargement of the REVIEW, in 1875, enabled it to include the results of observations by voluntary observers, and also notes and extracts from current meteorological observations, and it became widely recognized as a model for other nations to copy and improve upon. In 1878, Gen. A. J. Myer, the Chief Signal Officer, and head of the Weather Bureau, thought it important to try the experiment of translating the REVIEW into French and publishing an international edition. The labor and expense attending this experiment was subsequently found to be prohibitive, but the few copies of this edition that are still to be found in the libraries mark one of the many interesting episodes in the history of the Weather Bureau. Unfortunately, the copy of the French edition that formerly belonged to the library of the Weather Bureau has mysteriously disappeared, and the Librarian joins with the Editor in the hope that several of our numerous correspondents have, or know of, copies for sale or exchange. We would esteem it a favor to be apprised of the fact, so that we may be enabled to complete our files.

RAFINESQUE ON ATMOSPHERIC DUST.

In Science for August 10, 1900, Mr. Wm. J. Fox gives a complete table of contents, with occasional notes of Vol. I, No. 1, of Rafinesque's *Western Minerva, or American Annals of Knowledge and Literature*. This was published at Lexington, Ky., in January, 1821, and was to have been the first number of a long series, but some trouble with the printer unfortunately prevented any further publication.

Professor Rafinesque occupied a prominent place in American science. He was born of French parents in Turkey, in 1784, came to America in 1802, and spent several years making botanical collections. He went back to Europe and returned to New York in 1815, but was unfortunately wrecked on the coast of Long Island, where he lost the collections that represented twenty years of work. He was then, for a time, Professor of Botany in Transylvania University at Lexington, Ky., but soon removed to Philadelphia, where he died in 1842. The periodical whose title is given above has a slight interest for meteorologists, in that it contains a letter on atmospheric dust, addressed to Governor DeWitt Clinton, Albany, N. Y., and which is the second article that Rafinesque seems to have written. At that time dust was considered as a matter that interested the geologist rather than the meteorologist, but the interest taken in this subject since the great eruption of Krakotoa, and especially, the demonstration that the presence of dust materially contributes to facilitate the formation of rain and snow, to increase the radiation and absorption of heat, and to affect the percentage of polarized light justifies the modern meteorologist in considering the dust floating in the air as being quite as essential a portion of the atmosphere with which he has to deal as is the moisture or any other variable component. It is customary to state with great precision the chemical constitution of the so-called dry air, but this term should now be modified and made more explicit by using the phrase "dry and dustless air." In his Philosophy of Storms, Boston, 1841, on page 36, Espy states that to his astonishment, it was much more difficult to secure saturated air by expansion in his nepheloscope after the air had been kept a long time, and had frequently been brought into the cloudy condition. We now know that this was due to the fact that by keeping the air quiet, and especially, by his frequent production of cloudy condition by expansion he must have almost wholly cleansed the air of dust, so that eventually he was experimenting with dustless air, thereby producing, as it seemed to him, a decided fall in the dew-point. He suspected that the water or glass of his enclosure attracted and condensed the particles of aqueous vapor; he had not then learned the importance of dust in facilitating condensation.

Although Rafinesque looked at the atmospheric dust from another point of view, yet, his views also have some interest in connection with the history of this subject. The American Journal of Science began with the publication of Volume I, No. 1, in July, 1818. In the fourth number of this first volume, published in June, 1819, Professor Rafinesque, who was at that time probably living in Lexington, Ky., published his first article "Thoughts on atmospheric dust." This gives results to which he had attained years before, viz:

> That in general dust is falling at all times from the atmosphere; that atmospheric dust exists on the tops of the highest mountains; that a portion of it, if not all, is chemically formed in the atmosphere like snow, hail, meteoric stones, honey-dew, earthy rains, etc., by the combination of gaseous and elementary particles dissolved in the air; its formation is sometimes very rapid and its accumulation very thick in the lower strata of the atmosphere; it settles slowly to the ground in clear weather, but is quickly washed down by rain or snow; its accumulation in a quiet room varied from one-fourth of an inch to one inch in depth in the course of one year; but this was in a fleecy state and might by compression be reduced to one-third of this height, or perhaps one-sixth of an inch per annum; on an average from 6 to 12 inches thus accumulate in a century and mix with the soil to form mold; at Segesta in Sicily there is a temple about which from 5 to 8 feet of hard soil or ærial deposit has accumulated in 2,000 years, notwithstanding the washings of rain; the dust of the open air is ordinarily ascribed to the pulverization of the surfaces of roads and fields; other dust comes from the fragments of material consumed in the activity of mankind, but whence arises the dust observed by means of sunbeams in dark corners in winter, when the ground is frozen, or at sea or on the tops of rocky mountains. Just as the sea deposits particles that eventually form rocks so the air deposits a more delicate pulverulent matter.

On pages 134–136 of the first number of the second volume, of Silliman's American Journal, published in April, 1820, we find a reply to Professor Rafinesque by an anonymous correspondent, "X. Y. Z.," of Boston. He maintains that all dust comes from the action of the wind in raising up fine particles from the ground, and that even the dust seen at sea has the same origin, being capable of floating while being carried 1,500 miles over the Atlantic; he also asks:

> If 9 feet of earth accumulate from the dust in 1800 years, then, how happens it that rocks and stones are everywhere to be met with? Are

they also agglomerations of atmospheric dust, or does the atmosphere deposit in one place clay, another gravel, another rocks?

Modern physiography answers these queries of the Boston objector very easily. The rain combines with the wind to carry all fine particles down to the ocean as fast as they are formed anywhere in the atmosphere or on the land; it is only the coarser particles and the harder soils and rocks that, with the mould, remain in sheltered places to form the earth as we know it, and all these slowly disintegrate and go to the sea We must acknowledge it as a truth that several inches, and in many places several feet, of soil are washed into the ocean in every century, and that the accumulated weight of the ocean bed is counterbalanced by a gradual rise of the continents.

Moreover, the well recognized permanent addition to our globe, due to showers and myriads of meteors, is probably equivalent to not less than 1 inch per century for the globe, equal to 4 inches per century for the dry land surface, and all this is carried to the bottom of the ocean. As the meteors are visible 100 miles above us, it follows that either an atmosphere exists at that elevation or else an encircling ring of meteoric satellites. From a meteorological point of view, therefore, this meteoric dust is also of importance. It is this latter dust that comes down to the lower atmosphere from the very greatest heights.

As only one copy of the Western Minerva is known to exist (see Mr. Fox's article in Science, above quoted), the present Editor has secured a manuscript copy of the remarks contained therein by Rafinesque on atmospheric dust. These are in the form of a letter addressed to Governor DeWitt Clinton,[1] of Albany, N. Y., and dated October 1, 1820. It is in continuation of his letter previously published in the American Journal of Science, and although it may have only a historical value, it will nevertheless interest many of our readers, and shows that Rafinesque was certainly quite as reasonable as his critics in the views advanced by him. The geological views expressed by him are certainly crude and erroneous, but there is a modicum of truth in his idea as to the importance of dust.

We reprint herewith Professor Rafinesque's second article as it originally appeared on pages 27–29 of the Western Minerva, correcting only a few slips that are evidently typographical errors:

Dear Sir: I published in 1809 [evidently 1819—C. A.] some ideas upon this subject in the American Journal of Science. An anonymous reply to my remarks has since appeared in the same journal, which is calculated to mislead; and as I have not been able to evail myself of the same vehicle, in order to state more fully and explain the motives of my belief in the atmospheric spontaneous production of a great part of the dusty particles floating in the air, I take the liberty to address you some additional remarks on this subject, which, should my conjectures prove correct, will form an important link in the economy of nature.

The anonymous writer contends, with the generality of authors, that these dusty particles are altogether lifted by the winds and carried everywhere. I do not deny that the winds raise the terrestrial dust and often carry it to a distance; this happens whenever the ground is dry and the winds blow; but I assert that it is impossible that this terrestrial dust should be raised above the clouds or when the ground, being totally wet or frozen, *cannot afford any*. Yet, as a dust exists in the atmosphere as far as the clouds *at all times*, I venture to believe, with Virey, Patrin, Deluc, and other philosophers, that there must be another independent formation of dust in the atmosphere besides the scanty terrestrial supply wafted by the winds.

To prove this assertion, I need merely refer you to the observation of a very common meteoric phenomenon, which has seldom been noticed. Look at the clouds, toward sunrise or sunset principally, when the sun is concealed behind them, and an opening happens to take place through which the sun may shine obliquely. A pyramidal beam will immediately appear, similar to the luminous and dusty beam appearing in a room into which the sun shines obliquely. This common occurrence has received the vulgar name of *sunbeams;* but it is evident that it is not a mere beam of light, since it is not so bright or dazzling as the bright sun rays, nor is it an optical reflection of the enlightened atmosphere, since it is brighter and not azure. It must, therefore, be a beam of atmospheric dust, and its identity with the beams produced by a hole in a screen or a window in a room is evident. If several openings exist among the clouds, many beams will be seen; and this phenomenon is sometimes visible without openings, when many clouds act as screens.

It remains to prove that this phenomenon happens when there can be no terrestrial dust in the air, else it would be contended that this dust rises (like balloons) to the clouds. Choose for your observation a short time after a long and heavy rain or snow, which must have precipitated all the terrestrial dust to the ground, and you will perceive the same sunbeams under similar circumstances. Whence it must follow that this beam of dust must have preexisted above the sphere of the storm and fallen since from above the clouds; and as it can not be admitted with plausibility that any great quantity of terrestrial dust can exist permanently above the clouds, so as to be able to form immediately such immense volumes of dusty beams, or rather to fill all *the space* between the ground and the clouds, I think it rational to presume that this atmospheric dust is continually formed or evolved in the atmosphere and falls down after the rain to fill the vacuum.

The insight given us by modern chemistry into the gaseous formations of solid substances, will be amply sufficient to account for this spontaneous formation. We know now that sulphurated arsenic and mercury, sulphur, muriate of ammonia, etc., can be formed by the sublimation of gases; that smoke, soot, manna, volcanic productions, meteorolites, earths, and even stones or metals, etc., may be spontaneously combined by a casual meeting or mixture of gaseous emanations. It is not, therefore, difficult to conceive how dusty particles may be formed in the great chemical laboratory of our atmosphere.

A singular instance of atmospheric formation has been recorded in the travels of La Pérouse. He saw, in a storm, on the east coast of Tartary, the actual formation of a number of slender threads, similar to spider webs. The numerous instances lately ascertained of earthy rains, containing many oxides, come still nearer to the point; they only differ from the common dust, by their tenuity, color, locality, and composition. They are local phenomena and productions, while the atmospheric dust is a permanent and universal phenomenon.

It is absurd to suppose that the atmospheric dust ought to have covered the earth with a coat or stratum 27 feet thick in 1800 years, as the anonymous writer wishes to suppose. Even if the average of dust falling in one century should be ascertained to be 6 inches, it must be remembered that the greatest proportion is precipitated by rains, diluted, and carried down the streams with the rain water; a small proportion alone is mixed with the soil and *increases its* bulk. It is only in hollows, caves, corners, pits, etc., that it may accumulate to a certain extent, and compression will greatly reduce it.

It is also absurd to ask whether this dust forms all the rocks and soils on the face of the earth. But it is reasonable to suppose that it contributes to a certain degree to their increase. Our soil is formed by the decomposition of rocks, the accumulation of vegetable and animal decayed substances mixed with this atmospheric dust.

That it may in some instances form or increase substances and stony strata or conglomerations can not be denied, since this effect takes place under our eyes in cisterns and reservoirs of rain water. The earthy and dusty particles conveyed into them by the water are gradually deposited, forming concretions and stones. This is very evident in the old cisterns of the east, which have held rain water during a long period of time.

Everything, therefore, seems to indicate that there is an extensive and permanent formation (and fall) of dust in the atmosphere; that it contributes to form our soils, our alluvions, and some stones; to fill the fissures and hollows of rocks and lavas, preparing them for vegetation; and that in former times, when many of our substrata were formed, it may have been more abundant, contributing to the formation of some of those strata.

This may appear paradoxical to some persons slightly acquainted with geological and meteorological phenomena, but not unreasonable to those who observe with care. I have ventured to announce in my lectures that another formation must be added to our present geological formations, the atmospheric or meteoric formation, to which must be referred all those singular geological anomalies which puzzle so much the systematic writers, when they find extraneous stones, soils, metals, and other substances mixed or superincumbent over late or newer formations. It may perhaps in time be found necessary to ascribe to meteoric formation those extensive substrata and upper strata of sand and gravel, which can not properly be deemed alluvial nor volcanic. When our rocks were formed under water by deposition, many of their principles must have originated in the briny ocean, but some may have been derived from the atmosphere.

[1] Governor Clinton was at this time President of the Literary and Philosophical Society of Albany, and numerous scientific papers published in the American Journal of Science were originally addressed to him and read before that Society previous to their publication.

LIGHTNING FROM A CLOUDNESS SKY.

Mr. J. N. Weed, of Newburg, New York, writes as follows: On Friday evening last (August 3), myself and five others were on

an elevation commanding a perfect horizon in the east, observing the stars with a telescope, and awaiting the rising of the new comet, Brooks. At 7:30 p. m. there was a light wind in this locality from the northwest, mere breathings. At about 9 p. m. there came a sudden gust of wind, lasting but the fractional part of a minute, and then, some minutes later succeeded by another gust of more force. After this they came more frequently, and soon developed into a cold, gusty, northeast wind, which lasted with variable force until 1 a. m., when I retired. At that hour the wind was strong but more to the north. Our horizon in the northeast quadrant is low. In the southeast, limited by mountain crests from four to seven miles distant, and ranging from one thousand to sixteen hundred feet high. Beyond this horizon are a succession of other mountains hidden from our view, with deep valleys between, including the valley of the Hudson River. The night was cloudless until the wind came.

Soon after this a few cloudlets of stratus formed near the north end of the mountains, say east-northeast, near the horizon, but disappeared before the appearance of the phenomenon I am about to mention.

At the moment of the rising of Fomalhaut above the mountains southeast, we noticed a gleam of lightning, of rather delicate type, just to the left of the star, and back of the mountains. The conditions were such that we could hardly believe that it was lightning, but it continued and increased, waxing and waning until we discontinued observations at 1 a. m. It seemed to me that it changed intensity with the wind. The lightning occurred at frequent intervals all along the horizon from the point of origin to near the east point, and was undoubtedly true lightning.

This is the first time I ever saw lightning in a cloudless sky, and it occurred to me that it might be of interest to the Weather Bureau to question their observers about it, as such phenomena are rare.

My first impression was that it was the reflection from a distant thunderstorm, as the lightning seemed always beyond the mountains and the place of origin below the crest line. On inquiry of some friends who were at Hemstead, L. I., that evening, they informed me that the night there was cloudless, and that at one time lightning occurred, as they then thought, but later concluded it was produced by a falling meteor of the August stream, many of which were visible that night there, as well as here. This information seems to exclude the thunderstorm theory. It seemed to me possible that the cold, gusty wind currents, falling at a steep gradient, as shown by the gusty type of the wind, might exchange electricities with the warmer surface air forced upward, and thus explain the phenomenon. The character of the topography would seem favorable, under such conditions, to the formation of convection currents with steep gradients.

With regard to the above, the Editor can only say that the daily weather map for 8 p. m., August 3, gives no indication of conditions favorable to lightning in the neighborhood of Newburg on the Hudson. In fact, the map shows that New England and eastern New York were in the midst of an area of high pressure and cloudless skies, and the cool, northerly winds had rapidly extended southward over this region. In general, as we have often had occasion to say, cloudless skies and dry air mean a general descending tendency in the atmosphere. The cold air that streamed down the Hudson River Valley was but one incident in the general character of the high area. Inasmuch as the sky was clear for 100 miles east of Newburg, we think there is no reason to assume a distant thunderstorm or even real lightning flashes between the earth and the sky, and we therefore incline to believe that Mr. Weed, like his correspondent at Hempstead, L. I., must have observed the flashes produced by distant meteors descending, perhaps nearly vertically, through the air toward the earth. Still, to a careful observer, the lightning flash and the meteor flash ordinarily present very different appearances, and we should be glad to receive some better explanation from those living east of the Hudson who may have seen the same phenomenon.

On Tuesday, August 7, about 5 p. m., according to a news despatch from Richmond, Va., lightning from an apparently clear sky, without warning, struck Mr. W. R. White and a colored farm hand near Coldharbor, Hanover County, while both were working in the open field.

The weather map gives no indication of any thunderstorm or rain in this neighborhood at that time; an area of high pressure prevailed, with very hot atmosphere near the ground. During the subsequent night it was cloudless throughout this region; a cool northwesterly wind sprang up. The circumstances are parallel to those attending the small lightning flashes seen at Newburg, except that the latter occurred at night-time. In both cases a cool breeze succeeded to a hot day, whence we infer that a vertical circulation of air was in progress. Ordinarily we think of the lightning that attends a thunderstorm as being in some way the result of the formation of cloud and rain or hail, but the frequent reports of lightning from a perfectly clear sky seem to suggest that the ascent and descent of the currents of air is the important feature in both cases.

WEATHER BUREAU STATION ON TURKS ISLAND.

Through the kindness of the local authorities, the Weather Bureau has opened a station at Grand Turk, Turks Island, W. I. (latitude, 21° 20′ N.; longitude, 71° 0′ W.; height of barometer above sea level, 11.3 feet). The station is located at the cable hut and the observations are made by Mr. O. Crewe-Read, who is not only station agent for the Weather Bureau but also operator for the cable company. His weather report will now be published regularly in the Royal Standard newspaper at that place and replaces the weather report hitherto published as made up by the messenger at the public buildings. When so ordered from headquarters at Washington or Havana, Mr. Crewe-Read will post on the bulletin board at the post office, advisory messages relative to hurricanes in the vicinity, and if one is to approach too near the island he will order the hurricane warning displayed on the flagstaff of Messrs. Frith, Brothers, so that the public may have ample warning of the approach of a dangerous storm.

The arrangements above mentioned were made under the immediate supervision of Dr. H. A. Frankenfield, Forecast Official, who visited the island for this purpose in June.

WELLS AND STORMS.

A correspondent says:

Why is it that in dozens of our bored wells the water just before a storm becomes riley, or partly muddy? From twelve to twenty-four hours before a storm my well becomes muddy and stays so."

As we know nothing about the location of these wells or the character of the storms with which the phenomenon occurs, we can only suggest a possible explanation. Extensive storms occur in the midst of areas of low pressure. When the barometric pressure is diminishing the air imprisoned within the soil can more easily push its way outward. Wells are but holes that open the way into the lower strata, and give the air and water contained therein an easier mode of egress. Every area of low barometer that passes near the well facilitates the escape of gas, and even of water, so that the well should stand higher when low pressures prevail. The bubbling up of the air through the water would undoubtedly make it riley, and, especially so if there be a deposit of fine mud and decaying vegetable matter at the bottom of the well. The trouble can be partly remedied in "dug" wells by placing one or two broad flat stones in a slightly inclined position at the bottom of the well, so that rising bubbles and muddy water are turned off to one side. But for bored wells, whose sides are cased with iron piping, we know of no remedy. Natural springs often flow more freely when the air pressure diminishes.

THE FREQUENCY AND EXTENT OF DESTRUCTIVE HAIL.

A newspaper paragraph states that a destructive, and in fact terrific hailstorm, occurred on July 30–31, in the valley of the Verde River, Ariz., and, especially between Pima and

Prescott. It is not clear what particular point is meant by Pima; there are many stations of that name in Arizona, but none of them very near to Prescott; the Weather Bureau voluntary station "Pima" is about 200 miles to the southeast of Prescott. This hailstorm seems to have occurred within the area of low pressure at the head of the Gulf of California, and while an area of high pressure was moving southward over the Rocky Mountains.

In general, the areas covered by destructive hailstorms, when they occur in the United States, are but a few square miles. Now that the prevention of a hailstorm by the Stiger method of cannonading begins to be advocated, it becomes important for us to know the total area covered by such storms in each State annually, also the number of storms at any one place, and the average frequency of their occurrence per year or decade. We hope that our section directors will be able to give some attention to these statistics, so that we may have some basis upon which to figure out whether it would be economical to go to the expense of preventing hail, assuming that we had an infallible method. Of course, where land is worth less than $5 per acre, and the annual crop from that land worth less than $10 per acre, it would be foolish to spend $100 per acre annually in protecting from hailstorms.

ATMOSPHERIC CONDITIONS FAVORABLE TO COTTON SPINNING.

Mr. Lee A. Denson, Observer, Weather Bureau, at Meridian, Miss., favorably indorses the following remarks of Mr. Louis Cohn of that place, extracted from a paper read by him on July 10 before the Young Men's Business League.

> Among the advantages of the South for the manufacture of cotton are * * * (8) mildness of climate peculiarly adapted to the proper manipulation of the delicate fiber, and also a saving of large expense in heating the manufacturing establishments. * * * The natural advantages of Meridian for the manufacture of the cotton fiber result from its peculiar physical location. Being almost entirely surrounded by hills and thus within a large basin, the moisture in the atmosphere is retained to a remarkable degree. The average conditions of the atmosphere, as found in Meridian, are such as are much sought by all intelligently-conducted cotton manufacturing plants, and large sums are invested for securing such conditions artificially as are here furnished by nature. It is the atmospheric conditions found in the Lancashire and Manchester sections of England and at Fall River, Mass., that have made those districts so celebrated for the manufacture of southern goods, and investigation will disclose the fact that Meridian possesses this essential requisite to a greater degree than possibly any other locality in the South.

Mr. Denson, in commenting on this paper, says:

> With Mr. Cohn, I, also, am firmly convinced that the general atmospheric conditions of Meridian are considerably influenced by the topographical surroundings. * * * I believe that the conditions are sufficiently well marked to warrant an investigation. It is a well-known fact that the temperature at Meridian with a northerly wind, is lower than at neighboring stations in the same latitude; this fact is also shown by the effect on fruit, as peaches are often killed here when trees beyond the hills on the south bear abundantly.

We understand that a relative humidity of 70 per cent, a temperature above 50° F., and freedom from atmospheric electricity, are the favorable conditions for cotton spinning, and that these are frequently secured by artificial means in those cotton factories that are not favorably located as to average climate.

It is not clear to us that the desired moderate temperatures and rather high relative humidity are secured by the establishment of a factory or a manufacturing town in a large basin surrounded by hills. There is no apparent reason why the moisture of the atmosphere should be especially retained by this arrangement; it is easily carried away by the wind. Such basins are usually hot and dry in the middle of the day, but cool and damp in the night-time and early morning. If the temperature at Meridian is really cooler with a northerly wind than at neighboring stations, we should be rather inclined to attribute this local coolness, as well as the accompanying humidity, to topographic conditions. We hope that Mr. Denson will furnish us with fuller data as to the relative humidity and temperature during the 10, 12, or 14 hours of factory work.

AURORA IN FLORIDA.

On page 582 of the Annual Summary for 1899, Mr. H. H. Ten Broeck gives some account of an unusual aurora observed by him at Braidentown, Fla. In a recent letter he says:

> I was formerly an observer for the Smithsonian Institution. In regard to the aurora of November 18, 1899, I would add that the next day I saw a press dispatch from Birmingham, Ala., reporting an extraordinary appearance observed at that place. The intelligent observer said that the bands of light were about 2 feet wide. The light was observed there over two hours before it was seen by me. This appears to show that the aurora is sometimes local and that its center is moving over the land. I have seen it stated repeatedly that the center of the aurora is over the earth's magnetic pole, but in this present case evidently it could not have been so.

The numerous notes on auroras in the Monthly Weather Review for 1895–96 have already shown that it frequently happens that auroras appear almost simultaneously in very restricted localities, although these may be widely separated from each other. The atmospheric conditions favorable to aurora formation almost always move slowly southward over the United States from New York and New England to Virginia at rates that correspond fairly well with the motion over Alabama and Florida on November 18, 1899.

PROGRESS IN WIRELESS TELEGRAPHY.

The following extracts from an article signed G. E. W. published in the Electrical World and Engineer, New York, August 18, page 252, seem to have been written by one in authority and desirous of saying the very best that can be said for the Marconi system of wireless telegraphy, especially as developed and modified by the engineers of the British army. The Weather Bureau will undoubtedly adopt some style of wireless telegraphy for communication with ships at sea as soon as apparatus has been devised that is reasonably economical and reliable, but we are not yet sure that Marconi's is the best. The following are the extracts referred to:

* * * * * * *

> Signor Marconi did not go to South Africa personally, but several of his assistants went there with several outfits of wireless telegraphy, and they operated in conjunction with the fleet patroling the coast. They confined their attention exclusively to sending messages between the several warships and between the fleet and the shore. At Delagoa Bay the British admiral sent messages a distance of 80 miles to the fleet off shore. The British battleship *Hannibal* also sent and received messages to and from the battleship *Jupiter*, when under way, over a distance of 32 miles. One message was sent 100 miles, the greatest distance successfully covered.
>
> While there were none of his assistants with the land forces in South Africa, his system of telegraphy was used by Lord Roberts, and a modification of it by General Baden-Powell. * * * Upon assuming command in South Africa, he (Lord Roberts) summoned a body of wireless telegraphers and kept them in his camp all through the struggle. These experts kept him in touch with the various units of his enormous army, and some of the messages were sent overland a distance of 60 miles. There are ten sets of instruments in Lord Roberts's army, and these have been developed successfully. All scientific questions and experiments made by a rapidly-moving army are of necessity scantily reported by a commander in the field, and the accounts of the tests with the wireless telegraphy are still quite vague. Considerable interest will be shown in the official reports of the operators when the war has terminated, and no one will hail the accounts of the experiments with more concern than the inventor.
>
> One important improvement in the system in war times was made through the cooperation of the hero of Mafeking. The difficulty of sending messages any great distance in a mountainous country like

South Africa was overcome by the invention of a system of kites by Baden-Powell. In order to make wireless telegraphy successful it is necessary to raise the wire attached to the instrument to a considerable distance in the air. Thus, to telegraph 60 miles the elevation of the wire should be at least 100 feet above the surface. It was often impossible to find any way to secure this altitude for the wires, but by using the kites the problem was easily solved. Kites of the Baden-Powell type consequently became inseparably associated with the wireless telegraphy in South Africa, and it was by this means that messages were sent a distance of 60 miles.

* * * * * * *

WIRELESS TELEPHONY.

Already in December 1899, the Editor had occasion to confer with Prof. R. A. Fessenden as to the possibility of modifying Marconi's system of wireless telegraphy, so as to give us a system of wireless telephony. Methods were suggested that can perhaps be made to work successfully, but the problem is far more delicate than that of wireless telegraphy and it is more important that the latter should first be developed to a high state of perfection, in order that we may with ease communicate with stations at very great distances. The 100 miles spoken of as an exceptional success, in the above paragraph, ought to become a matter of every day occurrence. Such great distances can, of course, be attained by using sending and receiving wires of very great length, suspended from poles or kites at great heights; but much better methods have already been devised by Professor Fessenden. A cablegram of September 8 announces that the wireless telephony has already been accomplished by the Chief of the Postal Telegraph Service of Great Britain, Mr. W. H. Preece, but this was only for a distance of five or six miles.

THE WEATHER OF THE MONTH.

By P. C. DAY, Acting Chief Division Meteorological Records.

PRESSURE.

The distribution of monthly mean pressure is graphically shown on Chart IV, and the numerical values are given in Tables I and X.

The areas of high pressure occupied their normal positions over the south Atlantic and north Pacific coasts, with slight departures from the normal. The permanent area of low pressure over the Plateau region embraced a wider extent of territory than the average, and the depression was considerably below the normal. The pressure was slightly above the normal in the Middle and South Atlantic States, attaining a maximum departure of +.07 inch at Augusta, Ga.; throughout the remaining part of the United States and the Dominion of Canada pressure was generally below the normal, with a maximum departure of −.10 inch at Yuma, Ariz. Compared with the preceding month, pressure was generally higher throughout the lower Mississippi Valley, the Atlantic and Gulf States, and over the northern Rocky Mountain and Plateau regions and the British Northwest Territories. In a narrow trough from the upper Lake region southwesterly to the south Pacific coast region the pressure was below that of the preceding month.

TEMPERATURE OF THE AIR.

The distribution of monthly mean surface temperature, as deduced from the records of about 1,000 stations, is shown on Chart VI.

Several periods of high temperature prevailed in the region east of the Rocky Mountains in connection with the southerly drift of the areas of high pressure toward the permanent high area off the south Atlantic coast. The average for the month was above the normal throughout the Atlantic and East Gulf States, the Ohio Valley, and the lower Lake region, also on the north Pacific coast, and in the upper Missouri Valley. Temperature was generally below the normal throughout the upper Lakes, the Mississippi Valley, and over the central and southern Rocky Mountain and Plateau regions. Maximum temperatures of 100° or over occurred at but few points east of the Mississippi Valley. In the upper Missouri Valley, however, and generally throughout the Plateau regions and in Arizona and parts of California, maximum temperatures from 110° to 120° were experienced. Minimum temperatures of 32° occurred at isolated points in the mountain sections.

In Canada.—Prof. R. F. Stupart says:

The mean temperature of the month did not differ very greatly from average in any part of the Dominion; the largest positive departures, amounting to some 2° or 3°, occurred in southern New Brunswick and western Nova Scotia, and the largest negative departures, also from 2° to 3°, in eastern Quebec, Alberta, and western Saskatchewan. A pronounced heat wave passed over the more western and southern portions of Ontario during the 6th and 7th, when temperatures of over 90° were registered, and still greater heat was recorded in Assiniboia between the 23d and 25th, when 102° was registered at Medicine Hat.

The average temperature for the several geographic districts and the departures from normal values are shown in the following table:

Average temperatures and departures from the normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
		°	°	°	°
New England	10	69.2	+ 1.4	+ 3.7	+ 0.5
Middle Atlantic	12	77.1	+ 2.5	+ 3.5	+ 0.5
South Atlantic	10	81.2	+ 1.3	− 3.6	− 0.5
Florida Peninsula	7	82.0	+ 0.5	− 6.0	− 0.9
East Gulf	7	80 6	− 0.4	− 8.6	− 1.2
West Gulf	7	81.1	− 0.8	+ 0.5	+ 0.1
Ohio Valley and Tennessee	12	77.7	+ 0.9	− 2.5	− 0.4
Lower Lake	8	71.8	+ 0.6	− 1.9	− 0.3
Upper Lake	9	66.5	− 0.8	+ 5.2	+ 0.7
North Dakota	8	68.8	+ 0.1	+29.1	+ 4.2
Upper Mississippi Valley	11	74.7	− 0.4	+ 5.1	+ 0.7
Missouri Valley	10	74 9	− 0.2	+16.4	+ 2.3
Northern Slope	7	69.2	− 0.4	+29.6	+ 4.2
Middle Slope	6	76 3	− 0.1	+12.7	+ 1.8
Southern Slope	6	77.4	− 2.0	+ 0.6	+ 0.1
Southern Plateau	15	78.7	+ 0.3	+12.0	+ 1.7
Middle Plateau	9	72.0	+ 0.7	+25.3	+ 3.6
Northern Plateau	10	67 7	− 0.2	+23.0	+ 3.3
North Pacific	9	62.3	+ 0.3	+14.2	+ 2.0
Middle Pacific	5	64.9	+ 0.5	+ 8.7	+ 1.2
South Pacific	4	71.2	+ 0.6	+11.8	+ 1.7

PRECIPITATION.

The monthly distribution of rainfall is shown on Chart III.

In parts of the Missouri and upper Mississippi valleys, the Lake region and over Texas, precipitation was above the normal, reaching a maximum departure of nearly 10 inches at Yankton, S. D., and over 15 inches at Galveston, Tex. In the South Atlantic and east Gulf States precipitation was much less than normal, especially on the immediate coast, where the fall was less than 50 per cent of the average. Throughout the remainder of the States and Territories the fall was generally less than the normal. No serious droughts

prevailed, however, except at the end of the month in Arizona and over parts of Colorado and Utah, where crops and stock were beginning to suffer for water.

For the period January 1 to July 31 of the current year the precipitation was generally less than the average.

In Canada.—Professor Stupart says:

In nearly all parts of the Province of Quebec and in eastern and northern Ontario the rainfall was nearly double the average for July. On the higher lands of western Ontario, and also in the Niagara Peninsula, it was well up to or in excess of the average, while close along the north shore of Lake Ontario, and in the counties of Grey and Bruce, there was a small deficiency. The most marked deficiency, however, occurred in the Maritime Provinces, and especially in the southern portion, where the weather was unusually dry.

In Manitoba and the Territories the total fall during the month was well up to average. The only note by observers relative to destruction of property by local storms is from Brandon; a tornado occurred 6 miles north of that town and injured houses.

The following table shows, by geographic districts, the precipitation departures from, and percentages of the normal for the current month, also the accumulated departures since the first of the year:

Average precipitation and departure from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
		Inches.		Inches.	Inches.
New England	10	2.18	63	−1.3	− 0.4
Middle Atlantic	12	3.07	72	−1.2	− 3.5
South Atlantic	10	3.18	52	−2.9	− 1.3
Florida Peninsula	7	4.89	76	−1.6	+ 8.1
East Gulf	7	5.64	92	−0.5	−10.6
West Gulf	7	5.79	187	+2.7	+ 3.3
Ohio Valley and Tennessee	12	3.33	81	−0.8	− 5.9
Lower Lake	8	4.67	152	+1.6	− 0.1
Upper Lake	9	4.43	146	+1.4	− 3.1
North Dakota	8	2.34	82	−0.5	− 6.2
Upper Mississippi Valley	11	4.91	132	+1.2	− 2.6
Missouri Valley	10	6.43	168	+2.6	− 0.7
Northern Slope	7	1.24	76	−0.4	− 1.8
Middle Slope	6	2.86	100	0.0	− 0.1
Southern Slope	6	4.95	168	+2.0	+ 3.0
Southern Plateau	15	0.89	56	−0.7	− 1.9
Middle Plateau	9	0.09	18	−0.4	− 1.5
Northern Plateau	10	0.26	46	−0.3	− 0.9
North Pacific	9	0.64	68	−0.3	− 0.6
Middle Pacific	5	T.	00	−0.1	− 4.3
South Pacific	4	T.	00	0.0	− 4.2

HAILSTORMS.

Severe hailstorms visited parts of Minnesota on the 10th, and occurred in both Minnesota and North Dakota on the 27th. Those of the 27th were especially severe over several counties and completed the destruction of such vegetation and crops as had not already succumbed to the effect of the disastrous drought earlier in the season.

HAIL

The following are the dates on which hail fell in the respective States:

Alabama, 17. Arizona, 20. California, 2. Colorado, 2, 3, 4, 8, 15, 22, 24. Connecticut, 7, 12. Florida, 10. Georgia, 11, 13. Idaho, 5, 26. Illinois, 7. Indiana, 7, 11, 24. Iowa, 5, 6, 10, 12, 14, 19, 21, 23. Kansas, 7, 11, 28. Kentucky, 24. Louisiana, 10, 16, 17. Maine, 7. Maryland, 12, 22. Massachusetts, 7, 12. Michigan, 4, 6, 8, 10, 11, 29, 30. Minnesota, 1, 3, 4, 7, 9, 10, 11, 13, 21, 22, 27. Missouri, 7, 10, 11, 12, 15, 24. Montana, 1, 26, 27. Nebraska, 2, 3, 6, 7, 10, 11, 14, 15, 18, 19, 22, 23, 27. Nevada, 22, 23. New Hampshire, 12. New Jersey, 7, 10, 12. New Mexico, 4, 7, 8, 10, 12, 17, 19, 25, 28, 29. New York, 6, 11, 15, 20, 21, 31. North Dakota, 10, 13. Ohio, 7, 11, 23, 31. Oregon, 4, 5, 21, 22, 30. South Carolina, 11, 28. South Dakota, 3, 27, 28. Tennessee, 22. Utah, 3. Virginia, 22, 30. Washington, 8. West Virginia, 12, 22. Wisconsin, 3, 6, 7, 9, 10, 18, 19, 22, 28. Wyoming, 1, 2, 6, 14, 15, 28.

WIND.

The maximum wind velocity at each Weather Bureau station for a period of five minutes is given in Table I, which also gives the altitude of Weather Bureau anemometers above ground.

Following are the velocities of 50 miles and over per hour registered during the month:

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Boston, Mass	18	52	w.	Mount Tamalpais, Cal.	25	60	nw.
Buffalo, N. Y	7	56	sw.	Do	26	54	nw.
Do	8	52	sw.	New York, N. Y	4	65	nw.
Do	17	50	w.	Do	7	65	nw.
Cleveland, Ohio	7	55	w.	Point Reyes Light, Cal.	18	60	nw.
Do	17	51	w.	St. Louis, Mo	24	58	w.
Huron, S. Dak	12	60	se.	Sioux City, Iowa	5	54	s.
Miles City, Mont	22	50	e.	Yankton, S. Dak	4	52	sw.

SUNSHINE AND CLOUDINESS.

The distribution of sunshine is graphically shown on Chart VII, and the numerical values of average daylight cloudiness, both for individual stations and by geographical districts, appear in Table I.

The current month showed generally less than the normal amount of clouds and, therefore, a corresponding excess of sunshine.

The averages for the various districts, with departures from the normal, are shown in the table below:

Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	4.7	−0.2	Missouri Valley	3.9	−0.5
Middle Atlantic	4.3	−0.5	Northern Slope	3.5	−0.3
South Atlantic	4.4	−0.6	Middle Slope	3.6	−0.4
Florida Peninsula	5.1	+0.1	Southern Slope	4.2	+0.4
East Gulf	5.8	+0.8	Southern Plateau	2.0	−1.3
West Gulf	5.7	+1.5	Middle Plateau	2.2	+0.2
Ohio Valley and Tennessee	4.4	−0.2	Northern Plateau	2.5	−0.6
Lower Lake	5.0	+0.5	North Pacific Coast	4.0	−0.4
Upper Lake	5.3	+0.6	Middle Pacific Coast	2.5	−0.4
North Dakota	3.6	−0.7	South Pacific Coast	2.8	+0.1
Upper Mississippi	4.1	−0.2			

HUMIDITY.

As a result of the deficiency of rainfall and excess of sunshine the average humidity for July, 1900, was generally below the normal.

The averages by districts appear in the subjoined table:

Average relative humidity and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
	%			%	
New England	77	− 2	Missouri Valley	67	0
Middle Atlantic	70	− 2	Northern Slope	52	0
South Atlantic	78	− 2	Middle Slope	60	− 1
Florida Peninsula	80	0	Southern Slope	64	+ 6
East Gulf	81	+ 2	Southern Plateau	34	− 8
West Gulf	81	+ 8	Middle Plateau	22	−10
Ohio Valley and Tennessee	71	+ 2	Northern Plateau	37	− 6
Lower Lake	71	+ 3	North Pacific Coast	71	− 6
Upper Lake	75	+ 4	Middle Pacific Coast	57	−10
North Dakota	57	− 9	South Pacific Coast	63	0
Upper Mississippi	72	+ 4			

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table VII, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

Thunderstorms.—Reports of 6,376 thunderstorms were received during the current month as against 5,476 in 1899 and 5,736 during the preceding month.

The dates on which the number of reports of thunderstorms for the whole country were most numerous were: 19th, 309; 4th, 306; 7th, 299; 23d, 292.

Reports were most numerous from: Ohio, 377; New York, 374; Missouri, 357.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz, 8th to 16th.

In Canada.—Auroras were reported as follows: Victoria, 26th, 27th, and 28th.

Thunderstorms were reported as follows: Halifax, 12th; Grand Manan, 17th; Yarmouth, 18th; Chatham, 24th; Quebec, 7th, 11th, 13th, 23d, 24th, 30th, 31st; Ottawa, 31st; Kingston, 6th, 8th, 11th, 17th, 24th, 30th; Toronto, 5th, 6th, 11th, 15th, 17th, 29th; White River, 14th; Port Stanley, 5th, 7th, 8th, 11th, 15th, 17th, 21st, 29th, 31st; Saugeen, 14th, 24th; Parry Sound, 3d, 6th, 15th, 24th; Port Arthur, 2d, 14th, 19th, 28th; Minnedosa, 1st, 13th, 17th, 27th; Qu'Appelle, 12th, 13th, 16th, 17th; Medicine Hat, 8th, 9th, 25th; Swift Current, 9th, 12th, 24th, 27th; Calgary, 25th, 26th; Banff, 3d, 12th, 16th, 25th, 31st; Prince Albert, 2d, 4th, 12th; Battleford, 4th, 5th, 9th, 12th, 13th; Hamilton, 13th, 14th, 20th, 22d, 29th.

DESCRIPTION OF TABLES AND CHARTS.

By ALFRED J. HENRY, Professor of Meteorology.

For description of tables and charts see page 214 of REVIEW for May, 1900.

TABLE I.—*Climatological data for Weather Bureau Stations, July, 1900.*

Stations.	Elevation of instruments: Barometer above sea level, feet.	Elevation of instruments: Thermometers above ground.	Elevation of instruments: Anemometer above ground.	Pressure, in inches: Mean actual, 8 a. m. + 8 p. m. ÷ 2.	Pressure, in inches: Mean reduced.	Pressure, in inches: Departure from normal.	Temperature of the air, in degrees Fahrenheit: Mean max. + mean min. ÷ 2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Mean wet thermometer.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches: Total.	Precipitation: Departure from normal.	Days with .01, or more.	Wind: Total movement, miles.	Wind: Prevailing direction.	Maximum velocity: Miles per hour.	Maximum velocity: Direction.	Maximum velocity: Date.	Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Total snowfall.
New England.							69.2	+1.4										77	2.18	-1.3										4.7	
Eastport	76	69	74	29.82	29.91	-.01	61.0	+0.6	78	28	69	48	14	53	26	57	55	87	1.87	-2.5	12	5,855	sw.	26	sw.	30	6	15	10	6.1	
Portland, Me	103	81	89	29.79	29.89	-.03	69.4	+0.9	92	17	78	53	1	61	27	62	58	69	1.70	-1.9	8	5,385	s.	26	nw.	1	17	8	6	3.9	
Northfield	876	15	65	29.01	29.92	-.02	66.2	+1.1	92	7	78	43	3	54	40	62	58	74	3.02	-0.1	17	6,160	s.	48	sw.	11	4	11	16	6.7	
Boston	125	115	181	29.80	29.93	.00	73.8	+2.5	97	18	83	55	1	65	30	66	61	67	2.69	-0.8	8	8,017	sw.	52	w.	18	11	11	9	4.9	
Nantucket	12	43	54	29.95	29.96	.00	69.4	+2.2	83	7	75	56	2	64	20	65	63	83	1.89	-0.6	9	6,795	sw.	28	nw.	1	10	13	8	5.4	
Block Island	26	11	70	29.94	29.97	+.01	69.8	+1.4	84	7	76	57	2	64	20	66	64	85	2.27	-0.9	7	10,164	sw.	35	w.	12	17	11	3	3.4	
Narragansett	...	10	...	...	...	...	71.2	+1.0	90	4	80	53	2	62	27	...	...	...	2.22	-0.9	5	...	sw.	...	...	...	15	10	6	...	
New Haven	106	117	140	29.85	29.96	.00	73.2	+1.4	96	18	82	54	1	64	30	67	63	74	2.28	-2.7	10	6,037	sw.	26	nw.	14	26	3	2	2.5	
Mid. Atlan. States.							77.1	+2.5										70	3.07	-1.2										4.3	
Albany	97	84	113	29.84	29.95	+.08	74.5	+2.1	99	17	86	55	2	64	29	66	61	66	3.41	-0.6	12	5,264	s.	32	nw.	12	10	18	3	4.7	
Binghamton	875	79	90	...	...	...	71.4	+2.7	94	16	83	45	2	60	35	...	...	...	2.29	-1.0	14	4,188	nw.	30	w.	30	4	19	8	5.8	
New York	314	108	346	29.65	29.97	.00	76.4	+2.9	94	18	84	58	1	68	27	68	64	72	4.33	+0.1	14	8,601	sw.	65	nw.	7	13	16	2	4.4	
Harrisburg	374	94	104	...	...	...	78.0	+5.1	100	17	88	57	1	68	30	...	...	...	3.14	-1.1	11	4,522	w.	39	sw.	25	10	16	5	4.8	
Philadelphia	117	168	184	29.87	29.99	+.01	79.2	+3.5	99	16	88	59	1	70	26	69	64	65	2.77	-1.4	14	6,464	sw.	38	nw.	12	14	9	8	4.7	
Atlantic City	52	68	76	29.95	30.00	+.04	73.4	+1.5	95	6	80	56	1	67	26	68	66	80	3.13	-0.8	9	7,180	sw.	42	nw.	18	13	16	2	3.5	
Cape May	17	47	51	30.00	30.02	+.05	73.9	+0.3	94	6	80	62	2	68	24	68	...	...	2.16	-1.1	13	4,838	s.	32	s.	12	14	15	2	4.2	
Baltimore	123	68	82	29.86	29.99	+.08	80.1	+2.9	100	17	89	58	1	71	27	70	65	64	1.51	-3.2	9	3,397	sw.	18	sw.	7	15	13	3	4.4	
Washington	112	59	76	29.88	29.99	+.02	78.7	+1.9	99	18	89	56	2	68	31	70	66	69	1.25	-3.3	9	4,214	s.	30	sw.	25	18	8	5	3.4	
Cape Henry	...	5	34	...	...	...	80.2	+3.2	100	8	88	63	1	72	25	...	...	...	4.38	-1.2	7	8,033	sw.	43	nw.	26	14	13	4	3.9	
Lynchburg	681	83	86	29.31	30.01	+.03	78.6	+1.1	98	16	90	58	10	67	36	69	66	68	1.92	-2.0	9	2,491	nw.	32	nw.	22	15	14	2	3.8	
Norfolk	91	102	111	29.93	30.02	+.03	80.9	+2.4	100	21	90	65	2	72	29	73	70	76	6.51	+0.6	7	6,143	s.	36	nw.	26	18	7	6	4.0	
Richmond	144	82	90	...	...	...	81.2	...	99	21	92	61	10	71	30	...	...	...	3.13	...	8	3,890	sw.	33	nw.	8	12	16	3	3.9	
S. Atlantic States.							81.2	+1.3										78	3.18	-2.9										4.4	
Charlotte	773	68	76	29.24	30.03	+.08	79.4	+1.2	98	21	89	60	10	70	28	71	67	73	3.55	-2.0	11	4,219	sw.	27	sw.	2	12	9	10	5.5	
Hatteras	11	17	86	30.03	30.04	+.04	79.0	+1.1	90	6	84	69	2	74	14	75	73	84	5.42	-1.0	7	8,645	sw.	33	sw.	12	22	6	3	3.1	
Kittyhawk	8	12	30	...	...	...	80.7	+2.7	98	*	87	67	*	74	22	...	...	...	1.63	-4.2	2	9,033	sw.	...	...	...	26	3	2	2.2	
Raleigh	376	93	101	29.65	30.03	+.02	80.9	+3.8	100	20	91	62	10	71	32	72	68	71	5.53	+0.5	10	3,912	sw.	28	nw.	8	16	11	4	3.8	
Wilmington	78	82	90	29.97	30.05	+.05	81.3	+1.6	98	22	89	70	14	74	23	74	73	81	1.08	-6.2	8	5,410	sw.	30	s.	20	13	12	6	4.5	
Charleston	48	14	92	30.03	30.08	+.07	82.8	+1.0	97	6	89	73	31	77	19	76	73	79	1.59	-6.0	7	6,580	s.	27	sw.	9	7	22	2	4.9	
Columbia	...	5	...	...	...	...	82.2	+0.9	99	7	93	65	10	72	26	...	...	...	4.35	-1.2	15	...	sw.	...	...	...	8	16	7	5.6	
Augusta	180	89	103	29.86	30.05	+.07	81.8	+0.7	97	6	91	66	10	72	*25	73	71	75	2.84	-2.4	10	3,836	sw.	30	se.	18	13	13	5	4.3	
Savannah	65	79	89	30.00	30.06	+.04	82.1	+0.2	99	7	90	70	29	74	22	75	73	84	2.02	-3.8	11	4,627	sw.	30	sw.	29	13	15	3	4.5	
Jacksonville	43	69	84	30.02	30.07	+.06	82.2	+0.1	97	6	90	68	27	74	26	75	73	81	3.83	-2.6	11	5,028	se.	36	w.	7	6	17	8	5.5	
Florida Peninsula.							81.9	-0.2										80	3.71	-2.4										5.1	
Jupiter	28	13	30	30.03	30.06	+.01	81.2	+0.4	91	30	87	71	15	76	16	75	75	81	3.49	-1.2	15	6,212	se.	36	se.	11	10	17	4	4.9	
Key West	22	43	50	30.02	30.04	+.03	82.6	-1.3	89	30	87	72	23	78	14	76	74	76	3.23	-0.6	12	6,776	e.	22	ne.	23	9	17	5	5.0	
Tampa	34	60	67	30.02	30.06	+.04	81.8	+0.4	95	10	90	68	19	73	24	75	73	83	4.40	-5.4	23	3,943	e.	28	se.	11	6	21	4	5.3	
East Gulf States.							80.6	-0.4										81	5.64	-0.5										5.3	
Atlanta	1,174	139	156	28.86	30.06	+.05	78.8	+0.4	93	16	87	64	10	70	24	71	68	76	4.51	-0.4	10	5,300	sw.	48	n.	8	12	12	7	4.9	
Macon	370	93	99	...	...	...	80.4	...	97	7	90	61	10	71	31	...	...	...	3.26	...	12	3,346	s.	38	nw.	8	0	28	3	5.1	
Pensacola	56	78	90	...	...	...	81.0	+0.2	90	7	87	68	12	75	16	...	...	...	10.71	+4.0	17	6,028	ne.	48	sw.	28	9	13	9	5.4	
Mobile	57	88	96	29.98	30.04	+.02	80.6	-0.6	94	8	87	70	12	74	18	76	75	87	4.33	-2.2	15	4,051	e.	26	s.	21	11	11	9	5.5	
Montgomery	223	100	112	29.81	30.04	+.03	81.0	-0.5	94	7	90	66	10	72	23	73	71	79	4.53	0.0	14	3,665	sw.	30	sw.	20	15	10	6	4.9	
Meridian	375	84	98	...	...	...	79.4	-0.6	92	7	88	65	10	70	25	...	...	...	3.06	-3.8	13	2,853	sw.	24	se.	20	3	21	7	6.3	
Vicksburg	247	65	73	29.75	30.01	+.01	79.8	-1.5	92	3	88	69	13	72	21	73	72	84	6.30	+1.8	17	3,756	se.	39	nw.	8	3	13	15	7.0	
New Orleans	51	112	120	29.97	30.03	+.02	81.2	-1.0	92	8	87	71	17	75	17	75	73	81	6.08	-0.4	18	4,459	se.	31	sw.	17	2	17	12	7.0	
Port Eads	...	27	...	...	...	...	83.0	+0.7	91	*	89	72	*	77	16	...	...	...	5.60	-2.7	12	...	se.	...	...	...	...	...	...	...	
West Gulf States.							81.1	-0.8										81	5.79	+2.7										5.7	
Shreveport	249	77	84	29.73	29.99	.00	81.2	-1.3	95	7	90	68	18	72	25	74	72	86	5.86	+2.3	14	4,332	se.	38	se.	18	3	6	22	7.4	
Fort Smith	457	74	82	29.49	29.96	+.01	79.8	-0.2	93	23	89	65	9	71	26	73	70	78	1.28	-3.2	6	4,258	e.	26	s.	21	9	12	10	5.6	
Little Rock	357	93	100	29.62	29.99	+.01	79.8	-0.5	93	3	88	68	12	71	22	73	72	81	3.77	-0.8	16	4,363	s.	35	nw.	11	7	15	9	5.6	
Corpus Christi	18	42	50	29.91	29.98	-.05	81.7	0.0	90	27	86	72	31	77	14	77	76	82	5.85	+4.5	9	9,420	se.	33	s.	13	10	13	8	4.6	
Fort Worth	670	106	114	...	...	...	80.7	...	95	2	90	64	9	72	29	...	...	...	5.90	...	9	7,940	s.	40	se.	30	10	16	5	4.9	
Galveston	54	84	88	29.90	29.95	-.04	82.4	-1.5	89	18	86	71	14	78	14	77	76	83	18.74	+15.6	11	5,739	se.	33	se.	13	6	16	9	6.0	
Palestine	510	54	61	29.43	29.96	-.03	80.3	-1.2	92	23	89	67	11	72	23	74	72	83	2.85	+0.3	14	4,516	s.	36	s.	4	9	13	9	5.7	
San Antonio	701	95	104	29.22	29.94	-.02	82.4	-0.9	96	2	92	69	1	73	25	74	71	76	2.24	0.0	6	5,221	se.	26	n.	29	4	19	8	5.8	
Ohio Val. & Tenn.							77.7	+0.9										71	3.33	-0.8										4.4	
Chattanooga	762	106	112	29.27	30.05	+.04	78.8	+1.0	93	16	88	61	10	70	25	71	68	75	1.37	-2.8	10	4,304	sw.	30	n.	8	10	18	3	4.5	
Knoxville	1,004	10	88	29.03	30.06	+.03	78.8	+2.4	94	17	88	60	10	69	27	71	68	78	3.90	-0.4	9	4,191	sw.	30	sw.	25	19	9	3	3.5	
Memphis	397	140	154	29.60	30.01	+.02	80.2	-0.5	92	2	88	67	10	72	20	73	71	77	2.56	-1.0	8	5,483	s.	30	w.	18	8	16	7	5.2	
Nashville	546	128	134	29.47	30.03	+.05	79.6	+0.3	93	17	88	62	10	71	24	72	70	76	2.87	-1.4	9	3,807	sw.	33	sw.	3	11	14	6	5.0	
Lexington	989	75	102	...	...	...	77.0	+1.8	93	15	87	58	9	67	29	...	...	...	2.80	-2.3	11	5,870	sw.	31	w.	19	15	13	3	4.3	
Louisville	525	114	136	29.46	30.01	+.03	78.8	+0.4	95	3	88	61	10	69	31	70	67	72	2.67	-1.1	11	5,169	sw.	35	nw.	7	11	14	6	4.8	
Evansville	434	72	82	...	...	...	79.2	...	92	3	88	62	27	71	22	...	...	...	2.44	...	7	4,862	s.	28	s.	24	18	10	3	3.3	
Indianapolis	822	154	164	29.13	29.98	+.01	75.2	-1.0	92	4	84	57	27	66	26	66	61	63	4.10	-0.2	11	6,565	s.	43	sw.	24	14	13	4	4.5	
Cincinnati	628	152	157	29.36	30.01	+.03	76.9	+0.5	94	15	86	59	1	68	32	68	64	68	3.48	+0.1	11	4,651	sw.	35	nw.	7	12	10	9	4.6	
Columbus	824	87	100	29.14	29.99	+.01	76.2	+1.3	97	15	87	53	1	65	35	66	62	67	3.89	+0.7	9	4,893	sw.	33	s.	17	16	10	5	4.1	
Pittsburg	842	116	123	29.11	29.98	.00	76.3	+1.3	96	16	87	52	1	66	33	66	61	66	3.42	-1.3	14	4,303	sw.	28	nw.	16	12	15	4	4.5	
Parkersburg	638	77	84	29.37	30.03	+.01	76.6	+3.1	98	16	87	53	10	66	34	68	64	71	5.55	+1.2	10	3,599	s.	32	nw.	16	19	11	1	3.2	
Elkins	1,940	41	50	...	...	...	70.4	...	91	17	83	45	1	58	41	...	...	...	5.59	...	14	2,426	w.	32	s.	19	10	14	7	5.2	
Lower Lake Region.							71.8	+0.6										71	4.67	+1.6										5.0	
Buffalo	767	178	206	29.15	29.95	+.01	70.4	+0.7	84	22	77	50	1	64	23	63	59	70	2.97	-0.2	13	9,957	sw.	56	sw.	7	2	25	4	6.1	
Oswego	335	76	87	29.57	29.93	-.03	69.4	+0.4	89	29	78	51	1	61	28	63	59	73	3.30	+0.2	14	6,020	w.	32	nw.	8	8	16	7	5.2	
Rochester	523	81	90	29.39	29.94	.00	71.5	+1.1	95	17	81	47	1	62	30	63	58	68	3.98	+1.0	13	5,920	sw.	32	sw.	8	12	14	5	4.7	
Erie	713	92	102	29.22	29.96	.00	71.4	+0.4	91	17	78	52	1	64	24	66	63	76	5.56	+2.8	13	7,144	w.	36	nw.	7	14	12	5	4.7	
Cleveland	762	190	201	29.18	29.97	-.01	72.5	+1.0	92	17	80	53	1	65	30	65	61	68	4.85	+1.4	14	9,239	s.	55	w.	7	12	16	3	4.3	
Sandusky	629	62	70	29.31	29.97	-.01	73.8	+0.7	94	15	83	55	10	65	28	66	63	71	7.58	+4.4	16	5,453	sw.	48	w.	17	5	12	14	6.1	
Toledo	628	123	128	29.32	29.97	.00	73.3	-0.1	93	4	82	54	12	64	26	66	62	70	5.43	+2.5	13	6,860	sw.	39	nw.	7	17	12	2	3.6	
Detroit	730	160	166	29.19	29.95	-.02	72.0	+0.4	92	5	81	51	12	63	26	64	60	69	3.71	+0.4	14	7,226	sw.	36	sw.	16	9	15	7	5.0	
Upper Lake Region.							66.5	-0.8										75	4.43	+1.4										5.3	
Alpena	609	61	65	29.27	29.92	-.02	64.6	-0.7	94	6	74	42	1	56	34	60	56	76	3.33	+0.4	14	7,050	nw.	32	w.	17	11	7	13	5.7	
Escanaba	612	43	57	29.26	29.91	-.02	64.0	-2.7	92	6	72	46	21	56	29	69	56	78	4.52	+1.3	14	6,885	s.	28	n.	17	9	11	11	5.6	
Grand Haven	632	55	64	29.27	29.94	-.02	67.8	-1.0	86	15	76	49	26	60	27	63	60	75	3.73	+1.0	12	6,823	sw.	31	s.	7	12	11	8	4.8	
Marquette	734	67	95	29.13	29.90	-.05	63.8	-1.1	91	6	71	46	10	70	27	59	56	77	4.62	+1.6	18	7,537	nw.	45	se.	10	8	9	14	6.2	
Port Huron	638	70	108	29.30	29.97	+.02	69.6	+1.1	92	5	79	42	1	60	28	63	60	73	3.86	+1.5	14	7,614	sw.	37	w.	11	11	16	4	4.6	
Sault Ste. Marie	614	40	61	29.24	29.89	-.07	61.4	-0.4	86	6	70	42	1	53	33	56	53	78	5.05	+2.1	17	6,398	w.	31	sw.	6	17	3	11	4.9	
Chicago	823	241	274	29.10	29.96	-.01	71.6	-0.4	92	14	79	55	9	64	25	67	65	82	4.64	+1.2	7	11,471	sw.	49	sw.	15	11	15	5	4.5	
Milwaukee	681	124	142	29.24	29.95	-.02	69.4	+0.2	93	5	78	52	20	61	29	63	59	73	4.93	+1.8	13	7,386	sw.	36	nw.	3	11	10	10	5.0	
Green Bay	617	49	57	29.28	29.93	-.05	68.1	-1.9	93	6	78	47	26	58	29	62	58	72	5.70	+2.8	12	5,870	s.	40	w.	7	5	12	14	6.6	
Duluth	702	95	115	29.14	29.89	-.03	64.7	-1.2	93	30	72	48	1	57	29	58	53	70	3.94	+0.2	18	7,502	ne.	36	sw.	6	9	10	12	5.5	
North Dakota.							69.5	+1.0										57	2.19	-0.6										3.6	
Moorhead	935	54	60	28.89	29.88	-.08	67.7	+0.1	100	21	80	46	25	55	42	60	55	67	3.10	-0.8	10	7,480	se.	42	se.	1	12	13	6	4.7	
Bismarck	1,674	16	29	28.15	29.86	-.04	70.7	+1.2	101	21	84	47	19	57	42	59	51	55	1.14	-1.2	6	7,537	nw.	34	ne.	21	21	9	1	2.8	
Williston	1,875	15	31	27.92	29.83	-.05	70.2	+1.7	102	31	84	39	19	56	44	58	48	50	2.34	+0.2	6	7,453	n.	42	n.	27	24	6	1	3.2	
Upper Mis. Valley.							74.7	-0.4										72	4.91	+1.2										4.1	
Minneapolis	...	99	208	...	...	...	71.0	-0.6	95	30	81	51	11	61	35	...	...	...	8.15	+4.3	12	9,472	w.	42	sw.	5	13	11	7	...	

TABLE I.—*Climatological data for Weather Bureau Stations, July, 1900*—Continued.

Stations.	Elevation of instruments: Barometer above sea level, feet.	Elevation of instruments: Thermometers above ground.	Elevation of instruments: Anemometer above ground.	Pressure, in inches: Mean actual, 8 a. m. + 8 p. m. ÷ 2.	Pressure, in inches: Mean reduced.	Pressure, in inches: Departure from normal.	Temperature: Mean max. + mean min. ÷ 2.	Temperature: Departure from normal.	Temperature: Maximum.	Temperature: Date.	Temperature: Mean maximum.	Temperature: Minimum.	Temperature: Date.	Temperature: Mean minimum.	Temperature: Greatest daily range.	Mean wet thermometer.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation: Total.	Precipitation: Departure from normal.	Precipitation: Days with .01, or more.	Wind: Total movement, miles.	Wind: Prevailing direction.	Wind: Maximum velocity: Miles per hour.	Wind: Maximum velocity: Direction.	Wind: Maximum velocity: Date.	Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Total snowfall.
Up. Miss. V.—Con.																															
St. Paul	837	114	124	29.00	29.88	— .07	71.4	— 0.1	95	30	81	54	11	62	37	63	58	67	5.81	+ 2.5	14	5,992	nw.	35	s.	13	14	11	6	4.4	
La Crosse	714	70	78	......	......	.....	71.4	— 1.5	94	4	81	50	12	62	32	....	....	....	9.50	+ 5.4	18	5,317	s.	30	s.	14	16	10	5	4.1	
Davenport	606	71	79	29.29	29.93	— .05	74.8	— 0.2	95	4	85	57	21	65	27	67	62	68	3.49	— 0.2	9	5,346	sw.	30	nw.	2	17	5	9	4.3	
Des Moines	861	84	88	29.04	29.94	— .02	74.2	— 0.3	95	3	84	54	9	64	31	68	66	78	5.15	+ 1.6	12	6,062	sw.	40	sw.	5	11	15	5	4.7	
Dubuque	698	101	109	29.20	29.93	— .03	72.8	— 1.5	92	4	82	53	21	63	28	65	61	71	8.00	+ 3.7	14	5,309	s.	40	sw.	2	14	14	3	3.7	
Keokuk	614	63	78	29.31	29.94	— .02	76.4	— 0.5	94	3	86	57	21	67	28	68	65	70	2.20	— 1.9	9	5,530	sw.	34	sw.	15	15	12	4	3.6	
Cairo	356	87	93	29.63	30.00	+ .03	78.8	— 0.1	91	7	86	65	9	71	21	73	71	82	3.13	— 0.3	13	4,812	s.	29	w.	24	8	16	7	4.8	
Springfield, Ill	644	82	92	29.31	29.97	— .01	76.0	0.0	94	7	86	56	27	66	28	68	63	69	2.89	+ 0.1	10	5,775	sw.	43	nw.	7	16	10	5	3.9	
Hannibal	534	75	110	......	......	......	76.6	— 0.1	96	7	86	57	9	67	34	....	....	....	1.79	— 2.1	8	6,834	sw.	45	s.	16	16	8	7	3.9	
St. Louis	567	111	210	29.38	29.97	.00	78.8	0.0	94	7	87	64	9	71	24	71	68	72	3.85	+ 0.1	9	6,428	s.	58	w.	24	16	10	5	4.0	
Missouri Valley.							74.9	— 0.2										67	6.43	+ 2.6										3.9	
Columbia	784	4	84	.....	......	....	76.6	+ 0.5	95	7	88	55	18	66	33	....	....	....	2.94	— 1.9	11	4,971	s.	40	nw.	7	16	6	9	4.5	
Kansas City	963	78	95	28.96	29.94	— .01	77.2	— 0.3	93	7	86	61	18	69	22	69	65	69	5.05	+ 0.8	10	6,268	s.	28	sw.	5	16	8	7	3.9	
Springfield, Mo	1,324	100	103	28.62	29.97	+ .01	76.0	+ 0.8	90	3	84	60	9	68	26	69	66	76	5.70	+ 0.9	9	6,368	s.	36	nw.	11	14	13	4	3.8	
Topeka	......	81	....	......	......	......	77.3	— 0.1	95	7	87	58	17	68	27	....	....	....	4.60	— 0.5	8	....	s.	..	......	..	13	17	1	3.9	
Lincoln	1,189	75	84	28.65	29.87	— .07	76.2	— 0.6	100	6	87	54	17	66	32	67	62	66	6.66	+ 2.8	9	8,626	s.	48	sw.	5	17	9	5	3.4	
Omaha	1,105	115	121	28.75	29.88	— .06	75.8	— 0.4	97	6	86	56	20	66	27	68	65	74	6.86	+ 2.1	11	6,265	se.	38	sw.	5	14	13	4	4.2	
Valentine	2,598	39	40	27.23	29.86	— .08	71.1	— 2.2	99	12	82	48	17	60	39	62	57	66	7.97	+ 5.5	12	8,153	s.	48	s.	12	14	7	10	4.1	
Sioux City	1,135	96	164	......	......	......	73.6	— 0.7	98	3	84	55	17	63	33	....	....	....	8.72	+ 5.4	11	9,560	s	54	s.	5	21	5	5	3.6	
Pierre	1,572	11	19	28.23	29.83	— .08	74.4	— 0.2	108	31	87	53	24	62	41	60	51	50	3.38	+ 1.2	9	8,758	se.	43	s.	12	17	9	5	3.5	
Huron	1,306	56	67	28.50	29.85	— .09	71.5	+ 0.6	100	31	84	50	20	59	40	63	58	65	5.59	+ 2.5	8	8,625	se.	60	se.	12	17	10	4	3.4	
Yankton	1,233	52	58	......	......	......	74.2	+ 0.6	99	31	85	53	17	63	33	....	....	....	13.27	+ 9.4	15	6,985	s.	52	sw.	4	15	12	4	4.2	
Northern Slope.							69.2	— 0.4										52	1.24	— 0.4										3.5	
Havre	2,505	46	47	27.27	29.82	— .06	68.8	+ 1.3	99	31	84	44	14	54	41	55	45	49	1.37	— 0.8	6	7,202	w.	42	nw.	26	22	9	0	3.2	
Miles City	2,371	42	50	27.38	29.78	— .11	73.4	— 0.3	110	31	88	50	16	59	46	63	58	65	0.58	— 0.8	5	5,236	nw	50	e.	22	19	10	2	3.0	
Helena	4,110	88	93	25.78	29.85	— .06	67.2	0.0	97	31	80	40	1	54	36	52	39	42	0.23	— 0.9	4	5,998	sw	42	sw.	25	15	13	3	3.8	
Kalispell	2,965	45	51	26.87	29.88	....	63.4	......	92	24	78	38	3	48	44	51	42	54	0.75	....	6	4,743	nw.	30	sw.	25	16	13	2	3.5	
Rapid City	3,234	46	50	26.56	29.78	— .12	71.5	+ 0.2	102	12	84	50	17	59	45	57	46	47	1.45	— 0.2	9	5,569	nw.	30	nw.	18	16	11	4	3.7	
Cheyenne	6,088	56	64	24.05	29.84	— .03	64.9	— 2.0	90	12	79	39	20	51	41	52	39	49	1.20	— 0.6	7	6,313	s.	36	sw.	13	12	16	3	4.0	
Lander	5,372	28	36	24.66	29.89	— .02	65.2	— 1.8	96	31	82	38	19	48	46	51	39	48	0.51	— 0.3	4	3,266	ne.	36	ne.	3	19	6	6	3.5	
North Platte	2,821	43	52	27.02	29.85	— .06	73.6	+ 0.1	100	12	86	46	20	61	36	64	59	64	3.37	+ 0.6	9	7,247	s.	36	s.	4	18	11	2	3.6	
Middle Slope.							76.3	— 0.1										60	2.38	0.0										3.6	
Denver	5,291	79	151	24.74	29.85	.00	71.2	— 0.5	96	12	86	44	20	57	41	57	48	51	1.80	— 0.4	7	5,789	s.	42	nw.	4	16	12	3	3.7	
Pueblo	4,685	80	86	25.27	29.84	— .03	73.2	— 0.8	100	14	89	53	6	58	43	57	45	47	1.34	— 0.8	7	5,063	se.	40	n.	19	17	13	1	3.3	
Concordia	1,398	42	47	28.46	29.89	— .04	79.0	+ 1.9	101	12	90	54	17	68	33	67	62	62	3.18	0.0	8	6,953	s.	28	s.	1	16	12	3	3.5	
Dodge	2,509	44	52	27.35	29.86	— .03	77.2	— 0.4	98	10	90	52	17	64	34	65	60	61	3.07	0.0	6	10,695	s.	49	nw.	28	24	7	0	2.6	
Wichita	1,358	78	85	28.54	29.92	.00	78.4	0.0	98	11	89	57	17	68	28	68	64	67	2.16	— 0.9	10	6,502	s.	27	nw.	23	16	12	3	3.7	
Oklahoma	1,214	54	62	28.68	29.93	+ .01	78.6	— 1.1	94	10	88	64	27	70	27	70	66	70	6.15	+ 2.3	6	7,252	s.	33	s.	15	15	8	8	4.5	
Southern Slope.							77.1	— 2.3										64	2.90	+ 1.0										4.2	
Abilene	1,738	45	54	28.14	29.90	— .03	80.6	— 2.1	96	24	90	65	30	71	28	69	64	62	2.59	+ 0.9	7	7,383	se.	40	ne.	30	14	12	5	4.6	
Amarillo	3,676	54	61	26.25	29.89	— .03	73.6	— 2.4	92	2	84	56	17	63	31	64	59	65	3.21	+ 1.1	10	7,688	s.	36	e.	10	16	11	4	3.8	
Southern Plateau.							82.1	— 0.3										34	1.21	0.2										2.0	
El Paso	3,762	10	110	26.12	29.81	— .02	80.9	— 1.0	101	15	93	63	9	69	33	63	53	48	2.38	+ 0.3	10	6,760	e.	46	ne.	10	8	19	4	4.3	
Santa Fe	7,013	47	50	23.33	29.86	— .05	69.6	+ 1.1	87	13	82	48	4	58	30	53	37	39	2.85	+ 0.1	7	5,123	se.	28	s.	14	19	12	0	2.9	
Flagstaff	6,907	12	25	23.37	29.92	......	65.6	......	92	10	84	34	4	48	47	50	..	....	0.23	— 2.6	2	....	sw	...	....	...	14	8	9	....	
Phenix	1,108	47	57	28.60	29.71	— .06	91.0	+ 1.1	112	11	105	67	4	78	39	64	44	25	1.70	+ 0.8	1	3,480	w.	40	e.	31	29	2	0	1.1	
Yuma	141	16	50	29.53	29.67	— .10	89.8	— 1.7	112	11	105	61	4	75	40	70	59	43	0.02	— 0.1	1	....	sw.	...	....	...	29	1	1	0.7	
Independence	3,910	51	58	25.88	29.68	— .10	79.4	— 0.9	100	11	93	55	3	66	33	55	26	16	0.08	0.0	2	6,270	nw.	28	w.	2	26	4	1	1.2	
Middle Plateau.							73.4	+ 0.2										22	0.14	— 0.3										2.2	
Carson City	4,730	82	92	25.24	29.85	+ .02	69.2	+ 1.3	95	29	85	44	3	53	41	51	33	30	0.10	— 0.1	1	4,810	w.	30	sw.	25	23	6	2	2.0	
Winnemucca	4,344	59	70	25.60	29.83	.00	70.4	— 1.0	98	29	88	42	1	53	50	50	22	20	0.04	— 0.1	1	6,753	sw.	38	sw.	31	23	4	4	2.3	
Cedar City	5,850	36	47	24.24	29.80	....	75.0	......	95	30	86	51	4	64	28	52	25	18	0.46	....	2	5,247	se.	24	s.	31	24	5	2	2.0	
Salt Lake City	4,366	105	110	25.55	29.80	— .05	74.7	— 0.8	99	8	88	53	1	62	37	53	81	24	0.32	— 0.2	3	4,459	nw.	24	sw.	8	26	5	0	1.1	
Grand Junction	4,608	43	50	25.29	29.74	....	79.2	+ 1.5	102	12	95	52	16	63	40	54	27	20	0.09	— 0.5	1	4,188	nw.	35	nw.	15	19	12	0	2.4	
Northern Plateau.							70.6	+ 0.1										37	0.17	— 0.3										2.5	
Baker City	3,471	53	58	26.40	29.88	— .06	66.4	+ 0.4	95	24	81	40	1	52	41	50	34	37	0.28	— 0.3	2	4,389	s.	26	sw.	10	21	9	1	2.4	
Boise	2,739	61	68	27.07	29.82	— .06	72.3	— 0.8	104	30	89	44	1	56	45	53	35	32	0.02	— 0.2	1	3,424	nw.	34	w.	4	25	5	1	1.7	
Pocatello	4,482	48	56	25.43	29.82	— .04	69.9	— 0.4	100	31	85	43	7	55	44	52	34	33	0.01	— 0.4	1	7,307	s.	40	n.	18	21	6	4	2.9	
Spokane	1,943	99	107	27.88	29.87	— .05	69.6	+ 0.6	100	24	84	47	13	55	40	54	39	40	0.34	— 0.4	2	4,234	sw.	32	w.	31	16	9	6	3.6	
Walla Walla	1,000	65	73	28.84	29.87	— .07	74.6	+ 0.6	102	31	88	50	7	61	42	59	48	44	0.22	— 0.1	2	4,303	s.	24	sw.	8	28	3	0	1.9	
N. Pac. Coast Reg.							62.3	+ 0.3										71	0.64	— 0.3										4.0	
Neah Bay	50	7	24	29.96	30.02	— .05	57.7	— 1.2	73	31	63	47	9	52	22	55	53	87	1.49	— 0.8	8	5,212	w.	28	w.	22	8	13	10	5.2	
Port Crescent	259	15	20	......	......	......	56.6	+ 0.3	80	19	65	42	9	48	33	....	....	....	0.74	+ 0.2	5	3,732	w.	20	w.	31	16	11	4	4.8	
Seattle	123	114	121	29.88	30.01	— .06	65.0	+ 1.8	84	20	74	52	7	56	28	57	53	70	0.66	— 0.3	7	3,686	w.	17	w.	11	15	9	7	3.9	
Tacoma	213	113	120	......	......	......	64.0	+ 2.0	85	22	74	50	6	54	31	....	....	....	0.33	— 0.4	4	3,966	n.	20	sw	4	17	10	4	3.6	
Astoria	20	57	64	30.04	30.06	.00	60.2	— 1.3	80	19	67	41	8	53	28	57	....	....	0.95	— 0.1	7	5,123	nw.	18	s.	11	13	8	10	5.1	
Portland, Oreg	154	203	213	29.82	29.98	— .05	66.6	+ 0.3	90	20	77	48	5	56	31	58	53	66	0.84	— 0.2	3	5,539	nw.	30	sw.	31	20	4	7	3.4	
Roseburg	518	56	67	29.38	29.94	— .09	66.3	0.0	95	19	81	44	6	52	40	56	49	62	T.	— 0.5	0	3,261	n.	20	n.	17	22	6	3	2.8	
Mid. Pac. C'st Reg.							64.9	+ 0.5										57	T.	— 0.1										2.5	
Eureka	62	60	69	29.92	29.98	— .07	56.4	+ 0.6	66	24	60	48	19	52	14	54	51	84	T.	— 0.1	0	4,682	nw.	28	nw.	12	9	18	4	4.6	
Mount Tamalpais	2,375	11	18	27.46	29.87	......	69.8	......	89	7	78	47	31	61	42	53	35	33	0.00	....	0	11,210	nw.	60	nw.	25	24	4	1	0.9	
Red Bluff	332	50	56	29.44	29.78	— .07	82.6	+ 0.8	109	19	98	60	24	67	37	62	46	33	0.00	0.0	0	3,531	se.	21	n.	6	31	0	0	0.3	
Sacramento	69	106	117	29.72	29.79	— .08	73.6	+ 1.0	100	7	90	53	2	57	43	60	51	53	T.	0.0	0	6,621	sw.	22	sw.	23	27	3	1	1.2	
San Francisco	155	161	167	29.73	29.89	— .05	58.2	— 0.1	73	6	65	48	15	52	23	54	51	83	T.	0.0	0	10,812	sw.	37	sw.	1	25	4	2	2.0	
Point Reyes Light	......	12	16	......	......	......	53.8	— 0.0	69	31	59	45	*	48	17	....	....	....	0.00	— 0.3	0	13,593	nw.	60	nw.	18	13	1	17	5.9	
S. Pac. Coast Reg.							71.2	+ 0.6										63	T.	0.0										2.3	
Fresno	330	67	70	29.42	29.76	— .08	82.4	+ 0.9	109	12	100	56	3	64	42	60	41	30	T.	0.0	0	4,388	nw.	14	nw.	11	28	1	2	1.0	
Los Angeles	338	74	82	29.49	29.84	— .07	70.8	+ 1.5	95	23	81	53	4	60	33	61	58	74	T.	0.0	0	3,710	w.	17	w.	22	8	23	0	3.3	
San Diego	87	94	102	29.75	29.85	— .07	67.6	+ 0.5	84	23	72	60	4	64	21	62	58	76	0.00	0.0	0	4,433	nw.	20	nw.	22	26	4	1	2.9	
San Luis Obispo	201	10	46	29.68	29.90	— .03	64.2	— 0.5	93	11	77	46	25	51	41	56	51	71	T.	0.0	0	3,331	w.	16	w.	21	15	12	4	3.9	
West Indies.																															
Basseterre	29	41	54	29.96	30.01	....	81.0	....	88	29	86	71	10	76	14	75	73	76	4.13	....	22	8,590	e.	30	e.	12	10	14	7	5.1	
Bridgetown	30	57	65	29.93	29.96	....	80.8	....	88	23	86	70	28	75	15	76	74	82	4.84	— 0.2	23	6,051	e.	31	e.	28	1	14	16	7.0	
Cienfuegos	52	62	67	29.94	29.99	....	80.8	....	93	22	89	68	19	72	22	75	73	84	6.44	....	24	5,090	ne.	26	e.	24	12	19	0	4.4	
Havana	57	83	100	29.95	30.01	....	80.0	....	90	15	86	70	27	74	17	75	74	85	5.40	+ 0.3	12	7,727	e.	36	ne.	5	4	16	11	6.2	
Kingston	286	38	52	29.65	29.95	....	80.6	....	94	18	89	70	25	72	21	73	70	75	2.62	....	12	4,700	ne.	25	se.	21	0	22	9	6.4	
Port of Spain	40	65	66	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
Puerto Principe	352	55	62	29.66	30.00	....	80.4	....	93	22	90	68	25	71	24	74	72	85	3.19	....	13	6,411	ne.	33	e.	26	9	16	6	5.1	
Roseau	25	37	47	29.95	29.97	....	81.0	....	90	22	88	72	1	74	16	74	71	74	8.45	....	23	8,551	ne.	22	e.	9	6	12	13	6.3	
San Juan	82	48	73	29.94	30.02	....	80.2	....	89	20	86	70	15	75	16	76	74	80	6.83	+ 0.6	25	9,909	e.	35	se.	30	10	17	4	4.8	
Santiago de Cuba	82	26	33	29.89	29.97	....	82.7	....	94	23	92	70	26	74	22	74	71	73	1.31	....	14	2,938	ne.	21	sw.	25	3	21	7	6.2	
Santo Domingo	57	37	44	29.97	30.03	....	79.6	....	90	5	86	70	24	73	18	74	73	85	5.76	....	16	4,204	n.	24	se.	9	4	21	6	5.7	
Willemstad	75	39	46	29.83	29.90	....	82.2	....	89	29	86	74	6	78	11	76	73	77	0.99	....	9	10,190	e.	27	e.	14	7	17	7	5.6	
Turks Island	11	6	20	....	....	....	83.2	....	91	17	89	69	25	77	21	....	....	....	0.97	....	11	....	e.	....	....	....	3	15	13	6.8	

NOTE.—The data at stations having no departures are not used in computing the district averages. Letters of the alphabet denote number of days missing from th record. * Two or more dates.

TABLE II.—*Climatological record of voluntary and other cooperating observers, July, 1900.*

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Alabama.	°	°	°	*Ins.*	*Ins.*
Ashville	94	58	76.7	6.45	
Bermuda	97	64	80.2	5.41	
Birmingham	94	63	80.4	7.88	
Brewton	99	66	81.8	7.83	
Bridgeport	...	...	...	3.28	
Citronelle	94	69	80.2	5.15	
Clanton	89	61	77.5	2.53	
Daphne	91	67	79.2	9.60	
Decatur	98	63	80.8	6.14	
Demopolis	...	...	...	1.58	
Elba	97	...	...	6.61	
Eufaula *a*	102	64	81.4	5.40	
Eutaw	95	64	81.4	3.14	
Florence *a*	...	...	...	4.01	
Florence *b*	93	62	79.4	4.48	
Fort Deposit	95	67	81.0	0.45	
Gadsden	96	62	79.0	3.47	
Goodwater	98	63	80.6	6.60	
Greensboro	92	65	79.9	2.29	
Hamilton	91	60	78.4	8.29	
Healing Springs	93	67	79.4	6.66	
Highland Home	97	68	83.2	2.28	
Livingston *a*	95	64	81.1	3.17	
Lock No. 4	94	61	79.6	6.97	
Madison Station	93	60	79.0	2.95	
Maplegrove	97	56	78.9	4.77	
Marion	99	65	81.4	3.91	
Newbern	95	65	81.4	3.86	
Newburg	94	65	78.6	7.12	
Newton	91	63	76.5	6.11	
Oneonta	89	58	76.6	6.72	
Opelika	96	63	79.6	4.64	
Oxanna	92	60	78.0	6.61	
Pineapple	99	65	80.9	6.90	
Prattville	94	63	80.3	...	
Pushmataha	95	67	80.8	1.38	
Riverton	95	60	79.4	2.49	
Scottsboro	99	58	78.8	4.50	
Selma	99	61	80.6	4.71	
Talladega	...	57	...	7.32	
Thomasville	95	66	80.0	2.73	
Tuscaloosa	96	62	79.9	5.18	
Tuscumbia	94	65	80.6	8.58	
Tuskegee	95	64	81.2	6.06	
Union Springs	96	65	81.2	5.30	
Uniontown	96	65	80.8	2.80	
Valleyhead	94	60	78.6	3.77	
Warrior	...	...	...	6.17	
Wetumpka	97	63	81.5	2.71	
Alaska.					
Juneau	77	45	56.6	5.19	
Killisnoo	74	46	57.8	8.45	
Orca	...	...	...	5.06	
Sitka	69	45	55.4	3.77	
Skagway	84	40	62.0	1.70	
Arizona.					
Allaire Ranch	...	...	...	1.60	
Arizona Canal Co. Dam	111	70	90.0	0.10	
Aztec	...	...	...	0.40	
Benson *[1]	104	70	91.4	1.28	
Bisbee	99	58	78.5	1.12	
Bowie *[1]	103	73	88.3	0.14	
Buckeye	109	40	86.2	1.30	
Camp Creek	106	60	84.4	0.11	
Champie Camp	116	62	90.0	0.60	
Cochise *[1]	113	69	84.6	0.00	
Congress	108	66	86.9	0.32	
Dragoon Summit *[1]	98	65	81.1	0.40	
Dudleyville	110	52	85.6	0.55	
Fort Apache	102	48	76.0	0.82	
Fort Defiance	96	41	70.4	0.20	
Fort Grant	99	61	81.4	0.50	
Fort Huachuca	100	60	79.4	2.30	
Gilabend *[1]	114	77	95.5	0.00	
Ingleside	113	62	89.6	0.53	
Jerome	98	64	80.9	1.30	
Maricopa *[1]	114	75	94.8	0.24	
Mesa	112	62	89.7	0.08	
Mount Huachuca	102	59	78.8	2.97	
Natural Bridge	...	...	...	0.34	
Oracle	100	62	82.0	0.37	
Oro	...	...	...	0.34	
Pantano *[1]	99	68	82.8	0.62	
Parker	124	...	...	1.00	
Peoria	116	62	91.4	0.78	
Phenix	112	61	89.7	1.30	
Pima	108	49	86.1	0.04	
Pinal Ranch	...	...	...	0.82	
Prescott	104	41	74.0	0.45	
San Carlos	115	52	87.4	0.32	
San Simon *[5]	105	77	90.8	0.00	
Sentinel *[1]	117	79	95.7	1.03	
Signal	120	52	88.2	0.69	
Silverking	...	...	...	0.71	
Snowflake	101	40	72.2	1.31	
Strawberry	101	40	71.8	0.04	
Arizona—Cont'd.	°	°	°	*Ins.*	*Ins.*
Supai	115	64	88.9	0.13	
Tombstone	101	64	81.7	1.55	
Tonto	111	54	86.6	T.	
Tuba	104	56	80.8	0.00	
Tucson	108	61	88.3	0.65	
Vail *[5]	105	72	90.0	0.05	
Walnut Grove	...	...	...	0.00	
Willcox *[1]	106	70	90.4	0.56	
Yarnell	...	...	...	0.69	
Arkansas.					
Amity	92	63	78.8	4.20	
Arkadelphia	94	66	80.6	4.89	
Batesville	95	58	81.0	3.86	
Beebranch	...	...	...	4.55	
Blanchard Springs	94	68	80.1	4.48	
Brinkley	94	61	80.3	3.66	
Camden *a*	...	...	...	3.38	
Camden *b*	95	65	81.0	3.53	
Canton	96	55	78.6	3.04	
Conway	95	64	81.7	5.43	
Corning	92	59	78.4	3.56	
Dallas	94	63	79.2	6.37	
Dardanelle	...	...	...	4.94	
Elon	94	65	80.2	7.22	
Fayetteville	94	52	75.8	2.22	
Forrest City	95	57	78.0	2.15	
Fulton	...	...	...	9.01	
Hardy	94	58	78.9	2.81	
Helena *a*	...	...	...	3.35	
Helena *b*	94	63	81.1	3.27	
Hot Springs *b*	...	...	...	6.55	
Jonesboro	102	60	83.0	2.61	
Keesees Ferry	97	54	78.4	4.09	
Lacrosse	93	59	78.2	4.42	
Lonoke	96	56	80.7	3.30	
Luna Landing	93	67	80.5	7.51	
Lutherville	90	59	77.2	3.68	
Malvern	92	61	77.8	6.03	
Marianna	96	61	81.4	4.41	
Marvell	97	62	81.8	2.95	
Mossville	93	65	79.4	5.98	
Mount Nebo	86	54	74.4	5.85	
New Gascony	95	62	81.6	6.36	
Newport *a*	...	...	...	3.07	
Newport *b*	95	58	80.6	2.92	
Newport *c*	96	56	80.9	3.35	
Oregon	92	60	77.1	5.87	
Osceola	101	60	83.3	1.09	
Ozark	96	63	81.4	3.75	
Pinebluff	96	65	81.8	5.72	
Pocahontas	92	58	78.2	2.35	
Pond	91	52	75.4	4.22	
Prescott	95	67	81.6	2.60	
Rison	98	67	82.0	4.86	
Rosedale	94	65	80.5	5.77	
Russellville	95	64	80.2	5.64	
Silversprings	92	55	76.8	4.35	
Spielerville	94	60	79.7	2.01	
Stuttgart	94	62	80.2	5.16	
Texarkana	98	69	82.4	4.67	
Warren	93	65	80.7	2.50	
Washington	92	66	79.4	6.79	
Wiggs	92	62	78.9	8.37	
Witts Springs	95 *d*	51 *d*	76.8 *d*	7.14	
California.					
Angiola	108	50	80.2	0.00	
Ballast Point L. H.	...	...	...	0.00	
Bear Valley	...	...	...	0.03	
Bellevue	...	...	...	0.10	
Berkeley	82	52	63.2	0.00	
Beverly	...	...	...	T.	
Bishop	100	50	77.6	T.	
Boca *[1]	96	34	59.9	T.	
Bodie	85	30	57.4	0.00	
Bowman	...	...	...	0.02	
Branscomb	...	...	...	T.	
Campbell	92	43	65.4	0.01	
Cape Mendocino L. H	...	...	...	0.00	
Cedarville	95	39	69.5	0.10	
Chico *[1]	107	62	84.6	0.00	
Cisco *[1]	82	44	60.2	0.15	
Corning *[1]	110	70	82.8	0.00	
Coronado	90	60	68.9	...	
Cottonwood	...	...	...	0.00	
Craftonville	104	52	77.2	0.14	
Crescent City	68	40	55.6	0.00	
Crescent City L. H	...	...	...	0.00	
Cuyamaca *[5]	87	56	75.0	0.28	
Delano *[1]	107	67	84.2	0.00	
Delta *[1]	105	63	78.7	0.17	
Drytown	104	52	77.0	T.	
Dunnigan *[1]	104	60	77.1	0.00	
Durham *[1]	101	60	80.2	0.00	
East Brother L. H	...	...	...	0.00	
Edmanton *[1]	93	45	65.9	0.00	
Elcajon	106	50	72.9	0.00	
California—Cont'd.	°	°	°	*Ins.*	*Ins.*
Elmdale	108	47	77.4	0.00	
Elsinore	108	48	78.4	T.	
Escondido	100	45	70.6	T.	
Fallbrook	105	52	74.1	0.00	
Folsom City *[1]	103	66	78.1	T.	
Fordyce Dam	...	...	...	0.17	
Fort Ross	76	45	58.2	0.00	
Georgetown	98	52	76.1	0.08	
Gilroy (near)	105	37	66.7	0.00	
Goshen *[5]	106	69	83.5	0.00	
Grand Island *[5]	103	56	78.8	0.00	
Greenville	98	32	65.1	0.21	
Hanford	106	50	79.6	0.00	
Healdsburg	100	40	68.4	T.	
Hollister	96	43	64.1	0.00	
Humboldt L. H	...	...	...	0.00	
Indio *[1]	114	77	93.4	0.00	
Iowa Hill *[1]	91	58	73.7	0.05	
Irvine	104	64	82.6	0.00	
Jackson	94	50	71.6	0.00	
Jolon	...	...	...	T.	
Kennedy Gold Mine	97	50	73.5	0.00	
King City *[1]	92	50	69.5	0.00	
Kingsburg	108	70	84.8	0.00	
Lamesa	...	...	...	T.	
Laporte *[1]	87	50	62.2	0.06	
Las Fuentes Ranch	...	...	...	0.00	
Lemoncove	110	53	82.7	0.00	
Lick Observatory	86	51	71.6	0.01	
Lime Point L. H	...	...	...	0.00	
Lodi	102	51	74.8	T.	
Los Gatos *b*	97	47	68.6	T.	
Mammoth *[1]	115	80	95.8	0.00	
Manzana	104	56	88.2	0.00	
Mare Island L. H	...	...	...	0.00	
Mills College	...	...	...	0.00	
Milo	...	...	...	0.00	
Milton (near)	...	...	...	0.00	
Modesto *[1]	108	60	80.2	0.00	
Mohave *[1]	107	68	88.2	0.00	
Mokelumne Hill *[3]	...	53	72.2	T.	
Monterio	98	52	77.6	0.00	
Monterey *[5]	79	56	65.1	0.00	
Morena	...	...	...	0.07	
Napa *b*	96	49	68.8	0.00	
Needles	116	72	93.6	1.10	
Nevada City	88	45	68.3	T.	
Niles *[1]	100	60	69.9	T.	
North Bloomfield	91	50	71.6	0.00	
North Ontario	95	51	72.2	0.00	
North San Juan *[1]	98	50	70.8	T.	
Oakland *a*	82	53	64.9	0.00	
Ogilby *[5]	115	78	99.0	0.00	
Orland *[1]	112	65	81.6	0.00	
Palermo	107	50	78.3	0.00	
Paso Robles *b*	106	45	70.2	T.	
Peachland *[5]	90	52	67.7	T.	
Piedras Blancas L. H	...	...	...	0.00	
Pigeon Point L. H	...	...	...	0.00	
Pilot Creek	...	...	...	0.02	
Pine Crest	99	50	68.5	0.12	
Placerville	108	42	74.0	T.	
Point Ano Nuevo L. H	...	...	...	0.00	
Point Arena L. H	...	...	...	0.00	
Point Bonita L. H	...	...	...	0.00	
Point Conception L. H	...	...	...	0.00	
Point Firmin L. H	...	...	...	0.00	
Point George L. H	...	...	...	0.00	
Point Hueneme L. H	...	...	...	0.00	
Point Lobos	68	49	56.8	0.00	
Point Loma L. H	...	...	...	0.00	
Point Montara L. H	...	...	...	0.00	
Point Pinos L. H	...	...	...	0.40	
Point Sur L. H	...	...	...	0.00	
Pomona (near)	99	48	72.4	0.00	
Poway *[3]	97	63	69.0	0.00	
Quincy	93	38	65.9	T.	
Ranch House	...	...	...	T.	
Redlands	104	53	77.0	0.04	
Reedly	107	54	80.9	0.00	
Represa	98	56	76.5	0.00	
Riovista	102	54	74.3	T.	
Riverside	103	52	75.8	0.00	
Roe Island L. H	...	...	...	0.00	
Rosewood	112	53	86.4	0.00	
Sacramento *a*	101	59	74.4	T.	
Salinas *[1]	79	58	64.8	0.00	
Salton *[5]	126	74	97.0	0.50	
San Bernardino	106	47	76.0	0.34	
San Jacinto	110	50	78.6	0.01	
San Jose	90	53	69.8	0.02	
San Leandro *[1]	84	57	64.8	0.00	
San Luis L. H	...	...	...	0.00	
San Mateo *[1]	87	60	70.0	0.00	
San Miguel *[1]	102	55	74.8	0.00	
Santa Barbara *a*	96	51	65.9	0.02	

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
California—Cont'd.	°	°	°	*Ins.*	*Ins.*
Santa Barbara L. H				0.00	
Santa Clara *a*				0.00	
Santa Cruz *b*	87	40	60.7	T.	
Santa Cruz L. H.				0.00	
Santa Maria	87	50	66.8	T.	
Santa Paula	96	47	71.2	0.00	
Santa Rosa*[1]	92	51	67.0	0.00	
Shasta	111	56	83.0	T.	
Sierra Madre	98	53	72.6	T.	
Sonoma				0.00	
S. E. Farallone L. H				0.00	
Stanford University	92	48	66.0	0.00	
Stockton	100	54	73.7	0.00	
Summerdale	90	44	67.4	0.00	
Susanville	94	36	68.2	0.63	
Tehama*[1]	110	70	87.2	0.00	
Tejon Ranch	105	59	83.6	0.00	
Templeton*[1]	107	60	79.4	0.00	
Thermalito	104	55	80.0	0.00	
Trinidad L. H				0.00	
Truckee*[1]	88	44	60.4	0.00	
Tulare *b*	112	52	84.4	T.	
Ukiah	104	41	72.6	T.	
Upperlake	103	46	74.4	T.	
Upper Mattole*[1]	86	46	61.0	0.00	
Vacaville *a**[1]	102	60	76.8	0.00	
Ventura	82	53	65.3	T.	
Visalia *b*	108	51	78.6	0.00	
Volcano Springs*[1]	125	80	100.2	0.08	
Walnutcreek	102	57	76.0	0.00	
Wheatland	102	51	76.8	T.	
Williams*[1]	103	63	84.8	0.00	
Wilmington*[1]	90	63	72.9	0.00	
Wire Bridge*[5]	101	60	79.4	0.00	
Yerba Buena L. H				0.00	
Yreka	90	41	70.6	0.00	
Colorado.					
Arkins				1.05	
Boulder	95	45	70.7	0.48	
Boxelder				2.72	
Breckenridge	77	29	52.0	0.83	
Buenavista				0.06	
Canyon	98	50	72.2	0.91	
Castlerock	95	38	66.6	1.77	
Cedaredge	97			T.	
Cheyenne Wells	100	51	74.0	2.09	
Clearview	78	32	55.7	1.13	
Collbran				T.	
Colorado Springs	92	47	66.8	1.30	
Cope	101	50	73.7	1.56	
Crook	102	43	74.2	3.39	
Delta	109	41	75.8	T.	
Dumont				1.87	
Durango	92	36	66.8	0.02	
Fairview	88	37	61.4	1.81	
Fort Collins	98	40	67.9	1.14	
Fort Morgan	101	40	71.2	1.52	
Fox				2.49	
Garnett	88	35	61.6	0.33	
Gilman				0.23	
Gleneyrie	89	47	65.4	1.99	
Greeley	97	42	70.3	1.28	
Grover				2.60	
Gunnison	92	34	68.3	T.	
Hamps	94	44	67.2	1.94	
Hoehne	96	45	71.8	1.10	
Holly	101	51	77.4	1.62	
Holyoke (near)	105	39	72.0	2.71	
Hugo				2.25	
Lake Moraine	76	30	54.9	3.90	
Lamar	104	58	77.5	1.55	
Laporte				1.75	
Las Animas	104	50	76.0	2.00	
Lay	99	31	67.6	0.20	
Leadville*[1]	80	40	55.4	T.	
Leroy	102	42	71.6	1.68	
Longs Peak	78	27	54.8	0.51	
Mancos	98	37	67.4	0.02	
Marshall Pass				T.	
Meeker	103	31	67.6	0.45	
Minneapolis	102	45	75.1	1.03	
Mitchell				0.22	
Montrose				T.	
Moraine	86	29	59.4	0.36	
Pagoda	97	34	66.8	0.15	
Palmer				1.00	
Parachute	104	50	77.0	0.07	
Rockyford	103	52	74.4	1.78	
Rogers Mesa	105	46	77.0	T.	
Ruby				2.00	
Saguache	97	38	65.1	0.53	
Salida	94	38	66.6	0.46	
San Luis	87	40	63.7	1.66	
Santa Clara	91	40	65.0	1.18	
Sapinero				0.02	
Sargents				0.15	
Colorado—Cont'd.	°	°	°	*Ins.*	*Ins.*
Seibert				1.40	
Silt	97	45	72.9	T.	
Springfield				0.66	
Sugarloaf	90	31	59.4	1.97	
Trinidad	97	49	73.2	1.10	
Troutvale	89	26	55.4	0.50	
T S. Ranch	96	51	75.8	0.10	
Twinlakes				1.50	
Vilas				0.97	
Wagon Wheel	83	25	54.8	0.50	
Walden	98	29	61.6	0.11	
Westcliffe	85	35	62.0	1.29	
Wray	100	44	74.2	4.57	
Yuma				1.81	
Connecticut.					
Bridgeport	97	50	74.6	2.77	
Canton	94	46	70.0	4.65	
Colchester	94	51	72.2	2.48	
Falls Village				5.02	
Hartford *b*	95	53	73.9	4.20	
Hawleyville	95	47	72.2	3.02	
Lake Konomoc				3.51	
Middletown	99	48	73.8	2.92	
New London	95	58	74.5	1.46	
North Grosvenor Dale	94	46	72.4	4.16	
Norwalk	97	47	74.2	4.30	
Southington	93	52	72.3	2.70	
Storrs	93	52	71.0	2.76	
Voluntown	97	45	71.6	2.58	
Wallingford				2.39	
Waterbury	99	49	74.8	3.10	
West Cornwall	94	49	70.8	6.09	
West Simsbury				3.99	
Winsted	93	54	72.6		
Delaware.					
Milford				1.50	
Millsboro	100	56	78.6	2.57	
Newark	98	54	77.4	4.68	
Seaford	100	58	80.2	2.84	
Wyoming				2.87	
District of Columbia.					
Distributing Reservoir*[5]	96	64	80.4	1.26	
Receiving Reservoir*[5]	95	63	79.8	1.41	
West Washington	100	53	74.6	1.39	
Florida.					
Archer	97	69	83.0	4.83	
Bartow	96	70	82.4	7.22	
Brooksville	98	71	82.4	6.65	
Carrabelle	94	73	82.2	6.30	
Clermont	100	70	84.0	7.45	
Dalkeith	97	69	81.8	14.51	
De Funiak Springs	96	68	80.8	10.44	
Deland	97	71	82.4		
Earnestville	97	70	83.7	8.98	
Eustis	100	70	83.8	7.98	
Federal Point	95	69	80.8	6.12	
Fort George*[1]	90	71	79.8		
Fort Meade	94	70	81.4	11.80	
Gainesville	101	71	84.7	4.15	
Huntington	95	68	81.2	5.88	
Hypoluxo	92	70	81.2	2.17	
Inverness	94	71	82.2	6.39	
Jasper	96	68	81.2	9.70	
Kissimmee	97	71	82.6	5.66	
Lake Butler	98	67	82.0	6.92	
Lake City	100	68	82.3	5.52	
Macclenny	100	64	82.5	11.99	
Manatee	94	68	79.8	11.05	
Marianna	94	69	80.4	8.31	
Merritt Island	94	72	83.0	4.34	
Middleburg	99	69	84.4	8.25	
Myers	92	70	79.8	9.63	
New Smyrna	94	67	79.6	3.95	
Nocatee	100	68	82.4	9.23	
Ocala	101	68	83.4	4.61	
Orange City	96	70	82.6	3.93	
Orlando	97	68	81.8	10.83	
Plant City	96	70	82.0	5.83	
St. Andrews	96	69	81.2	5.34	
St. Augustine	95	68	81.2		
St. Francis	94	62	79.8	2.87	
Sebastian	92	73	80.9	4.65	
Stephensville*[1]	95	70	80.2	12.38	
Sumner	95	65	81.4	15.36	
Switzerland*[1]	93	72	79.7	5.00	
Tallahassee	92	68	79.6	10.31	
Tarpon Springs	89	70	79.5	13.29	
Wausau	98	69	81.6	8.75	
Georgia.					
Adairsville	92	61	78.7	4.60	
Albany	99	70	83.6	5.07	
Allapaha	95	68	80.8	6.78	
Allentown	98	66	81.8	6.03	
Americus	99	66	81.9	5.26	
Athens *b*	97	63	80.8	4.13	
Bainbridge	96	69	81.6	5.98	
Georgia—Cont'd.	°	°	°	*Ins.*	*Ins.*
Bellville	100	67	82.1	7.08	
Camak	98	65	82.1	5.00	
Carlton				1.87	
Cedartown	93	61	80.2	3.75	
Clayton	91	60	76.1	5.32	
Columbus	95	68	82.2	7.46	
Covington	100	60	80.6	4.08	
Dahlonega	95	53	74.0[b]	8.74	
Diamond	89	55	74.6	4.66	
Dublin				5.11	
Eastman	100	67	82.5	5.16	
Elberton	95	65	80.5	3.14	
Experiment	93	60	78.6	6.84	
Fitzgerald	103[d]	66	82.2		
Fleming	99	65	81.2	4.06	
Fort Gaines	96	68	81.8	3.63	
Franklin	91	65	79.4	6.06	
Gainesville	89	59	76.2	3.88	
Gillsville	95	57	78.0	3.42	
Greenbush	94	57	77.6	2.81	
Griffin	97	63	80.2	5.20	
Harrison	95	63	80.8	3.79	
Hawkinsville	97	68	81.9	4.70	
Hephzibah				3.80	
Jesup	98	68	81.6	7.35	
Lost Mountain	92	64	78.3	3.75	
Lumpkin	98	68	81.5	3.50	
Marshallville	97	66	82.2	4.74	
Mauzy	100	64	81.4	6.98	
Millen				6.48	
Monticello	95	65	79.8	4.27	
Morgan	98[i]	65[i]	80.8[i]	2.91	
Naylor	98	67	82.0	6.50	
Newnan	97	61	80.2	7.20	
Oakdale				7.10	
Point Peter	99	60	81.2	6.90	
Poulan	96	66	79.8	9.04	
Putnam	98	63	81.0	6.15	
Quitman	100	66	81.2	14.98	
Ramsey	92	54	77.0	3.45	
Resaca				5.18	
Rome	99	61	80.2	4.80	
Statesboro	101	67	83.0	3.54	
Talbotton	97	62	80.2	4.90	
Tallapoosa	95	56	77.6	6.19	
Thomasville	98	69	81.6	7.98	
Toccoa	96	65	81.2	3.02	
Union Point	93	66	79.8	5.64	
Valona	95	68	81.0	3.14	
Washington	96	67	81.4	6.34	
Waycross	102	67	83.2	8.06	
Waynesboro	98	63	79.2	2.90	
Westpoint	95	68	81.4	3.60	
Idaho.					
American Falls	104	35	67.8	0.00	
Atlanta	94	31	60.7	0.18	
Blackfoot	101	31	66.8	0.26	
Burnside	95	41	66.2	0.23	
Challis	95	39	62.8	T.	
Chesterfield	95	25	57.2	0.57	
Downey	99	32	63.8	0.00	
Forney	98	25	61.4	0.12	
Fort Sherman	100	40	67.0	0.22	
Garnet	110	50	78.7	0.00	
Hagerman	115	40	74.4	0.00	
Hailey	107	34	71.2	0.04	
Idaho City	103[a]	29[a]	66.0[a]	0.00	
Kootenai	95	28	66.5	1.06	
Lake	90	30	59.0	0.65	
Lakeview	96	43	66.6	0.58	
Lost River	90[g]	37[h]	63.8[g]	0.08	
Marysville	98[c]	24[c]	61.6[c]	0.23	
Moscow	98	46	70.2	0.35	
Murray	92	38	62.6	T.	
Oakley	101	41	70.0	0.35	
Ola	103	38	71.4	0.06	
Paris	95	32	62.6	0.17	
Payette	104	40	73.8	0.05	
Pollock	106	39	70.4	0.13	
Priest River	99[g]	41[g]	66.4[g]	0.11	
St Maries	97	39	6-.2	0.15	
Salubria	105[f]	29[f]	70.4[f]	0.17[f]	
Soldier	102	26	64.0	0.07	
Swan Valley	98	25	61.6	0.42	
Weston	96	40	68.3	0.62	
Illinois.					
Albion	95	59	78.0	4.19	
Alexander	94	54	75.7	2.74	
Ashton	94	45	71.6	4.60	
Astoria	95	49	74.9	1.82	
Aurora *a*	95	47	73.0	3.55	
Bushnell	99	53	77.8	2.70	
Cambridge	95	53	74.4	2.70	
Carlinville	96	54	76.5	5.99	
Centralia	96	57	77.0	0.77	
Chemung	92	45	70.3	4.73	

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.)			Precipitation.	
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
Illinois—Cont'd.	°	°	°	*Ins.*	*Ins.*
Chester	......	......	......	3.03	
Cisne	92	56	76.7	3.82	
Coatsburg	97	54	77.2	1.57	
Cobden	95	58	77.9	4.52	
Danville	94	50	74.4	7.25	
Decatur	94	51	75.6	7.80	
Dixon	96	49	73.6	4.36	
Dwight	95	52	74.9	4.49	
Effingham	98	56	76.5	4.08	
Elgin	92	48	71.8	4.55	
Equality	94	58	78.9	2.07	
Flora	92	51	75.5	5.61	
Friendgrove *[1]	94	68	81.6	4.56	
Galva	95	50	74.0	3.69	
Glenwood	96[e]	62[e]	77.1[f]	5.94	
Grafton	......	......	......	4.04	
Grayville	94[e]	60[e]	76.4[e]	3.71	
Greenville	94	57	77.4	2.51	
Griggsville	98	52	76.9	3.59	
Halfway	92	58	77.0	2.99	
Halliday	94	56	78.8	4.15	
Henry	95	49	74.6	2.76	
Hillsboro	94	56	76.2	2.96	
Joliet	94	50	73.0	5.08	
Kishwaukee	94	45	71.4	4.04	
Knoxville	95	45	73.5	3.21	
Lagrange	93[c]	47[c]	71.4[c]	5.64	
Laharpe	97	53	75.2	3.06	
Lanark	96	41	71.8	6.17	
Loami	......	......	......	3.10	
McLeansboro	95	59	78.4	4.45	
Martinsville	98	56	75.8	5.59	
Martinton	95	46	73.6	4.34	
Mascoutah	97	56	77.8	2.65	
Mattoon	94	60	77.5	4.76	
Minonk	95	45	73.8	2.21	
Monmouth	97	46	74.8	2.65	
Monticello	94	52	75.0	4.94	
Morrisonville	94	48	75.0	4.35	
Mount Carmel	......	......	......	4.17	
Mount Pulaski	95	55	76.4	5.76	
Mount Vernon	93	54	76.8	3.72	
New Burnside	95	61	79.1	3.43	
Olney	96	55	78.2	4.15	
Ottawa	97	50	75.8	4.53	
Palestine	96	54	77.9	11.96	
Pana	90	54	74.3	5.49	
Paris	94	53	76.0	4.35	
Peoria a	......	......	......	2.45	
Peoria b	98	52	77.1	2.45	
Philo	94	50	74.4	6.35	
Plumhill	92	56	76.6	2.47	
Rantoul	94	53	75.0	5.96	
Raum	94	63	79.9	2.73	
Riley	92	47	71.6	6.03	
Robinson	93	54	76.6	5.62	
Roundgrove	95	49[c]	72.3	5.35	
St. Charles	94	60	76.8	3.72	
St. John	98	59	79.6	4.89	
Scales Mound	92	45	70.8	6.97	
Shobonier	94	55	77.0	5.38	
Streator	95	45	73.8	3.13	
Sycamore	92	46	71.2	5.60	
Tilden	92	59	76.4	3.48	
Tiskilwa	96	52	74.3	2.40	
Tuscola	93	52	75.4	4.28	
Walnut	96	45	74.0	6.12	
Wheaton *[5]	92	58	74.6	3.97	
Winchester	96	55	76.2	4.75	
Winnebago	92	45	71.2	5.81	
Yorkville	94	45	72.2	3.84	
Zion	94	46	73.5	3.74	
Indiana.					
Anderson	92	51	74.4	5.85	
Angola	91	49	70.9	8.02	
Auburn	91[f]	47[f]	71.2[f]	5.29	
Bedford	98	55	81.0	5.11	
Bloomington	93	56	76.2	3.54	
Bluffton	95	48	73.8	3.03	
Bright	96	56	76.4	6.88	
Butlerville	94	50	75.8	6.03	
Cambridge City	92	49	74.4	7.06	
Columbus	94	53	75.4	4.46	
Connersville	96	51	74.6	5.77	
Crawfordsville	97	41	73.4	4.19	
Delphi	97	50	74.6	5.22	
Edwardsville *[1]	91	62	77.6	4.16	
Fairmount	98	45	74.5	3.16	
Farmland	92	50	72.2	2.34	
Fort Wayne	94	48	73.5	3.52	
Franklin *[1]	94	62	76.0	4.47	
Greencastle	90	54	75.3	4.87	
Greensburg	96	49	73.8	5.91	
Hammond	95	54	72.4	4.09	
Hector	97	50	74.2	2.26	
Huntington	95	52	74.6	3.46	

Stations.	Temperature. (Fahrenheit.)			Precipitation.	
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
Indiana—Cont'd.	°	°	°	*Ins.*	*Ins.*
Jeffersonville	95	58	78.3	2.45	
Knightstown	95	50	75.1	7.19	
Kokomo	91	51	73.2	4.31	
Lafayette	92	52	74.5	5.36	
Laporte	98	49	74.2	5.47	
Logansport	95	52	75.0	3.81	
Madison a	96	55	77.8	4.50	
Madison b	......	......	......	3.68	
Marengo	95	52	77.1	4.71	
Marion	95	48	74.7	2.92	
Markle	91	49	72.5	3.60	
Mauzy	93	49	74.2	4.79	
Northfield	95	46	74.0	5.20	
Paoli	92	53	77.2	2.32	
Peru	97	51	75.6	2.92	
Prairie Creek	100[d]	53[d]	78.6[d]	4.85	
Princeton	99	54	78.8	3.45	
Rensselaer	95	50	74.8	3.80	
Richmond	91	50	73.2	7.41	
Rockville	91	54	74.6	4.94	
Salem	95	53	76.7	3.78	
Scottsburg	95	56	77.6	3.56	
Seymour	96	58	77.0	7.10	
Shelbyville	94	55	76.0	3.83	
South Bend	92	49	72.6	5.81	
Syracuse	96	45	73.4	4.90	
Terre Haute	95	57	77.1	4.21	
Topeka	88	49	71.1	4.72	
Valparaiso	92	52	72.7	4.50	
Veedersburg	93	50	75.1	6.46	
Vevay	96	55	78.2	4.20	
Vincennes	97	60	79.0	7.02	
Washington	97	56	78.1	5.33	
Winamac	96	45	73.8	6.58	
Worthington	95	53	77.0	4.86	
Indian Territory.					
Bengal	98	52	80.3	2.70	
Claremore	98	58	78.0	6.81	
Fairland	94	55	77.0	6.69	
Hartshorne	99	60	81.2	2.30	
Healdton	102	59	81.5	5.26	
Lehigh	98	64	81.0	5.17	
Muscogee	94	56	75.0	3.78	
Pauls Valley	97[c]	60[c]	79.3[c]	7.27	
Ryan	104	61	82.6	4.34	
South McAlester	......	......	......	4.97	
Tahlequah	92	59	77.6	3.45	
Tulsa	......	......	......	1.20	
Wagoner	99	56	79.6	6.46	
Webbers Falls	96	62	80.6	2.40	
Iowa.					
Afton	98	50	75.0	5.67	
Albia	93	51	72.8	5.12	
Algona *[1]	92	58	73.2	5.84	
Alta a	92	50	70.8	11.11	
Amana	93	51	73.6	5.49	
Ames b	95	51	73.0	9.14	
Ames (near)	......	......	......	7.77	
Atlantic	97	50	74.8	8.20	
Batavia	......	......	......	3.69	
Baxter	94	54	73.2	5.39	
Bedford	98	51	76.5	3.93	
Belknap	93	55	74.5	2.84	
Belleplaine	93	50	74.1	6.65	
Bonaparte	96	53	75.0	1.95	
Britt	95	45	71.0	5.44	
Buckingham	......	......	......	6.63	
Burlington	97	53	75.7	2.87	
Bussey	......	......	......	4.30	
Carson	......	......	......	6.07	
Cedar Rapids	96	53	74.2	3.74	
Centerville	......	......	......	1.97	
Chariton	94	52	74.6	6.29	
Charles City	92	50	71.6	4.23	
Clarinda	98	51	76.4	3.46	
Clearlake	95	45	72.8	4.20	
Clinton	98	48	73.3	6.32	
College Springs	97	53	76.4	4.62	
Coon Rapids	94	53	73.4	5.61	
Corning	96	50	75.8	5.85	
Council Bluffs	101	55	76.3	6.47	
Crawfordsville	......	......	......	3.15	
Cresco	92	44	71.1	3.36	
Cumberland	......	......	......	4.33	
Danville	......	......	......	1.85	
Decorah	94[e]	46[e]	71.8[e]	4.48	
Delaware	90	51	70.4	8.06	
Denison	97	51	73.0	6.10	
Desoto	95	54	75.0	5.84	
Dows	92	47	71.2	6.72	
Eldon	96	51	75.7	2.17	
Elkader	95	48	73.0	8.60	
Emerson	......	......	......	3.99	
Emmetsburg	......	......	......	7.15	
Estherville	91	45	69.9	6.71	
Fairfield	94[c]	51[c]	74.2[c]	4.35	

Stations.	Temperature. (Fahrenheit.)			Precipitation.	
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
Iowa—Cont'd.	°	°	°	*Ins.*	*Ins.*
Fayette	93	48	70.9	7.28	
Fonda	95	48	71.6	8.57	
Forest City	91	49	70.6	6.26	
Fort Dodge	94	49	71.7	7.55	
Fort Madison	......	......	......	3.15	
Galva	93	51	72.6	7.42	
Gilman	......	......	......	5.46	
Glenwood	95	52	75.1	3.79	
Grand Meadow *[1]	88	54	68.9	8.24	
Greene	95	47	72.6	5.06	
Greenfield	96	52	75.0	5.33	
Grinnell (near)	93	55	72.9	5.74	
Grundy Center	91	51	71.4	7.69	
Guthrie Center	100[c]	46	73.7	3.16	
Hamburg	......	......	......	8.09	
Hampton	94	50	73.0	7.26	
Harlan	98	50	73.6	8.33	
Hawkeye	......	......	......	6.59	
Hedrick	94	51	73.9	4.29	
Hopeville	95	56	74.5	7.29	
Hoprig	......	......	......	4.04	
Humboldt	94	51	72.8	6.52	
Independence	91	50	71.1	11.02	
Indianola	94	54	74.8	4.45	
Iowa City	96	51	74.2	5.25	
Iowa Falls	95	48	72.0	5.30	
Keosauqua	94	54	76.0	3.19	
Lacona	......	......	......	4.39	
Lansing	94	49[a]	72.3[a]	5.28	
Larchwood	96	37	71.6	11.63	
Larrabee	93	48	70.4	14.08	
Leclaire	......	......	......	2.99	
Lemars	96	52	72.1	12.00	
Lenox	94	54	75.0	6.34	
Logan	102	51	75.8	7.39	
Maple Valley	......	......	......	10.95	
Maquoketa	93	40	71.2	8.04	
Marshalltown	95	52	73.8	7.14	
Melrose	......	......	......	3.25	
Monticello	95	48	72.1	6.49	
Mooar	96	49	72.2	1.80	
Mountayr	97	55	75.9	4.79	
Mount Pleasant	95[c]	51[h]	73.4[c]	1.94	
Mount Vernon b	93	50	72.5	6.05	
Murray	......	......	......	6.77	
New Hampton	91	51	72.4	3.77	
Newton	93	54	73.4	4.98	
Northwood	90	48	70.3	7.02	
Odebolt	98	51	74.6	6.67	
Ogden	94	51	73.3	8.03	
Onawa	97	54	74.5	10.34	
Osage	94	44	70.6	4.64	
Osceola	95	54	75.4	6.04	
Oskaloosa	93	50	73.4	4.41	
Ottumwa	93	58	76.7	3.35	
Ovid	92	52	73.8	3.47	
Pacific Junction	95	51	74.2	3.81	
Plover	95	49	73.2	8.58	
Primghar	93	49	73.8	18.45	
Redoak	98	52	75.6	4.57	
Ridgeway	94	53	72.6	3.71	
Rockwell City	95	52	72.6	5.66	
Ruthven	93	50	72.0	8.82	
Sac City	94	52	72.3	5.63	
Scranton	96	54	74.8	8.68	
Sheldon	94	50	71.0	16.56	
Sibley	96	47	71.0	8.41	
Sigourney	97	51	76.0	5.01	
Sioux Center	96	51	78.2	12.31	
Storm Lake	90	52	71.1	9.16	
Stuart	98	52	75.8	3.15	
Thurman	95	52	75.7	4.96	
Toledo	97	40	72.9	5.47	
Villisca	101	52	75.6	5.45	
Vinton *[1]	91	56	72.4	6.10	
Wapello	99	54	77.8	2.81	
Washington	93	50	73.2	2.65	
Washta	......	......	......	8.21	
Waterloo	93	50	72.2	7.99	
Waverly	92	52	72.2	5.61	
Westbend *[1]	94	57	71.6	5.62	
West Union	......	......	......	5.90	
Whitten	93	51	71.4	7.30	
Wilton Junction	96	47	73.9	3.97	
Winterset	96	52	74.8	7.24	
Kansas.					
Abilene	103	57	79.6	4.71	
Achilles	106	44	76.8	3.19	
Altoona	99	59	78.6	4.11	
Anthony	......	......	......	1.65	
Atchison a	94	57	76.4	5.67	
Baker	92	56	73.6	4.86	
Beloit	102	56	81.2	1.87	
Burlington	94	55	77.2	2.75	
Campbell	101	54	78.6	11.19	
Chanute	95	57	77.8	3.60	

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Kansas—Cont'd.	°	°	°	*Ins.*	*Ins.*
Coburn*[1]	94	58	74.8	2.20	
Colby	105	43	76.2	2.52	
Columbus	94	57	77.0	5.17	
Coolidge	104	49	76.8	1.82	
Cunningham	99	53	78.2	2.23	
Delphos	101	50	80.0	2.53	
Dresden	105	47	76.0	4.95	
Ellinwood	101	50	79.5	1.05	
Englewood	102	54	79.4	1.94	
Eureka	......	......	......	3.33	
Eureka Ranch	104	47	79.0	1.45	
Fallriver	95	58	77.2	7.36	
Fanning	99[d]	54[d]	78.6[d]	5.96	
Frankfort	100	54	78.1	6.45	
Garden City	104	52	79.3	2.18	
Gove	108	63	82.3	2.52	
Grenola	96	54	76.4	3.95	
Horton	93	57	76.1	7.86	
Hoxie	104	48	78.0	2.78	
Hutchinson	101	51	78.5	1.66	
Independence	99	61	79.1	3.51	
Lakin	97	52	76.8	2.19	
Lawrence	92	60	76.4	5.56	
Lebo	95	58	77.3	3.86	
Little River	100	52	78.0	2.01	
Macksville	97	50	77.0	2.25	
McPherson	99	52	78.2	1.80	
Madison	94	52	76.4	3.71	
Manhattan *c*	102	53	79.4	4.37	
Marion	97	58	79.0	2.75	
Medicine Lodge	100	54	78.8	1.95	
Minneapolis	102	51	79.5	1.73	
Moran	91	59	76.1	3.48	
Mounthope*[1]	96	63	79.7	4.33	
Ness City	......	......	......	2.68	
Newton	98	56	77.4	3.30	
Norwich	99	54[d]	78.0[d]	2.41	
Oberlin	......	......	......	2.58	
Olathe	95	56	76.6	5.32	
Osage City	95	61	76.8	8.22	
Oswego	96	58	78.2	4.23	
Ottawa	93	54	76.4	6.78	
Phillipsburg	104	50	79.3	3.16	
Pratt	102	53	79.7	1.16	
Rome	102	57	79.0	5.32	
Russell	103	50	80.0	2.47	
Salina	102	54	78.8	3.04	
Scott	106	48	76.6	1.57	
Sedan	97	56	77.6	3.16	
Seneca	96	54	76.8	4.98	
Sterling	104	56	85.0	1.25	
Toronto	98	56	77.2	2.55	
Tribune	102	51	75.8	1.32	
Ulysses	101[d]	53[e]	76.8[e]	2.20	
Valley Falls	......	56	......	3.14	
Viroqua	103	50	77.4	1.61	
Wakeeney (near)	......	......	......	2.32	
Wallace	......	......	......	1.29	
Wamego*[1]	96	60	77.8	6.44	
Winfield	99	59	78.6	5.57	
Winona	......	......	......	1.25	
Kentucky.					
Alpha*[3]	99	60	78.0	5.88	
Bardstown	95	56	78.6	6.08	
Blandville	98	61	78.8	5.49	
Bowling Green	94	60	80.1	5.72	
Burnside	......	......	......	4.79	
Canton*[1]	93	65	78.8	6.03	
Carrollton	94	62	79.5	5.87	
Catlettsburg	95	52	76.8	3.68	
Edmonton	95	55	78.6	6.27	
Eubank	94	52	75.4	6.46	
Falmouth	......	......	......	5.37	
Fords Ferry	100	55	77.1	6.00	
Frankfort	96	57	78.0	2.24	
Greensburg	94	56	77.8	6.43	
Henderson	94	61	79.2	2.46	
Hopkinsville	93	57	77.6	4.31	
Irvington	92	58	76.6	5.73	
Jackstown	98	50	77.4	5.91	
Leitchfield	93	57	77.0	3.32	
Loretto	100	53	77.0	6.74	
Marrowbone	94	56	78.0	4.64	
Maysville	101	51	79.0	2.87	
Middlesboro	97	55	74.2	......	
Mount Hermon	90	57	76.0	9.53	
Mount Sterling	96	55	78.0	7.12	
Owensboro	93	60	78.4	3.65	
Owenton	97	54	77.2	2.75	
Paducah *a*	......	......	......	5.47	
Paducah *b*	99	64	82.2	4.89	
Pikeville	98	57	77.9	2.66	
Princeton	95	58	79.3	3.82	
Richmond	98	54	78.0	3.08	
St. John	90	55	75.6	4.45	
Scott	94	53	76.6	6.18	
Kentucky—Cont'd.	°	°	°	*Ins.*	*Ins.*
Shelby City	95	54	77.2	4.08	
Shelbyville	99	55	79.0	2.47	
Vanceburg	98	50	75.0	6.00	
Warfield	95	56	76.3	5.51	
Williamsburg	96	59	79.2	12.84	
Louisiana.					
Abbeville	90	71	79.8	7.90	
Alexandria	96	69	81.8	7.27	
Amite	96	64	81.1	4.87	
Baton Rouge	96	68	81.0	5.81	
Burnside	95	69	80.4	3.91	
Calhoun	96	67	80.4	8.48	
Cheneyville	95	69	81.5	6.04	
Clinton	93	68	79.6	4.58	
Como	96	66	80.4	2.84	
Covington	94	70	80.9	6.25	
Donaldsonville	92	68	78.7	8.20	
Franklin	95	70	80.4	9.57	
Grand Coteau	94	69	80.0	9.31	
Hammond	95	69	81.2	3.77	
Jeanerette	97	67	80.2	11.40	
Jennings	92	69	79.8	6.47	
Lafayette	93	70	80.4	12.65	
Lake Charles	94	70	81.2	8.05	
Lake Providence	92	68	79.6	4.20	
L'Argent	94	68	79.8	6.11	
Lawrence	97	70[b]	82.4[d]	12.38	
Libertyhill	100	68	81.8	8.12	
Mansfield	97	68	82.0	3.70	
Melville	93	67	79.5	4.78	
Minden	97	65	81.9	3.28	
Monroe	98	63	81.2	......	
Montgomery	92	69	79.5	12.85	
New Iberia	91	71	80.0	7.05	
Oakridge	95	66	81.1	4.60	
Opelousas	97	60	79.6	......	
Oxford	93	66	79.8	3.18	
Paincourtville	95	69	81.6	8.40	
Plain Dealing	97	67	81.4	3.75	
Prevost	97	68	82.3	8.93	
Rayne	98	70	81.8	6.35	
Robeline	93	68	80.3	4.80	
Ruston	92	67	79.7	8.00	
Schriever	97	69	81.7	11.31	
Shellbeach	92	72	80.8	8.11	
Southern University	......	......	......	7.81	
Sugar Ex. Station	93	68	81.8	9.08	
Sugartown	91	70	80.6	7.34	
Venice	92	68	80.7	18.39	
Wallace	94	70	81.2	6.96	
White Sulphur Springs	......	......	......	8.33	
Maine.					
Bar Harbor	91	......	......	1.65	
Bemis	88	44	68.8	2.64	
Calais	85	45	66.8	2.31	
Carmel	90	43	68.4	3.14	
Cornish*[1]	98	54	70.4	2.38	
Fairfield	87	48	68.2	3.40	
Farmington	93	45	67.6	4.88	
Flagstaff	87	40	64.8	4.80	
Gardiner	97	51	71.8	1.87	
Kineo	90	45	68.1	5.21	
Lewiston	94	51	71.6	2.02	
Mayfield	88	45	66.8	4.48	
North Bridgton	94	44	70.0	2.95	
Orono	89	47	68.0	2.53	
Rumford Falls	92	48	69.2	4.35	
Winslow	92	45	69.6	4.17	
Maryland.					
Annapolis	100	60	79.8	2.00	
Bachmans Valley	102	47	76.5	2.98	
Boettcherville	105	42	77.1	3.65	
Boonsboro *a*	104	52	78.4	3.36	
Charlotte Hall	100	55	78.6	5.44	
Chase	100	46	77.0	2.16	
Chestertown	96	57	78.4	2.87	
Chewsville	101	44	76.8	4.34	
Clearspring	102	50	75.6	5.41	
Coleman	......	......	......	2.65	
Collegepark	103	50	79.3	2.08	
Cumberland *a*	99	56	78.3	3.23	
Cumberland *b*	......	......	......	2.82	
Darlington	101	49	77.4	3.83	
Deerpark	90	35	67.6	4.49	
Denton	100	62	81.1	3.43	
Easton	99	56	79.5	2.12	
Ellicott City	95	44	69.2	1.51	
Fallston	102	49	77.6	2.21	
Frederick	101	54	79.2	3.47	
Frostburg	95	42	72.1	4.10	
Grantsville	92	39	69.6	5.61	
Greatfalls	99	54	77.3	3.79	
Greenspring Furnace	106	47	77.3	3.31	
Hagerstown	105	47	77.8	4.94	
Hancock	105	45	77.7	2.92	
Harney	......	......	......	2.74	
Maryland—Cont'd.	°	°	°	*Ins.*	*Ins.*
Jewell	97	56	76.6	3.81	
Johns Hopkins Hospital	100	54	79.1	1.74	
Laurel	103	47	77.3	3.90	
McDonogh	100	54	77.1	3.40	
Mount St. Marys Coll	100	50	74.6	4.15	
Newmarket	109	51	77.5	6.13	
Pocomoke	98	58	79.6	3.98	
Princess Anne	98	55	77.6	2.97	
Rockhall *b*	98	55	79.3	1.81	
Sharpsburg	102	51	78.0	3.60	
Smithsburg *a*	102	45	76.7	3.49	
Smithsburg *b*	101	50	76.8	5.66	
Solomons	99	60	81.4	2.66	
Sudlersville	97	51	76.3	4.93	
Sunnyside	91	38	68.0	5.31	
Takoma Park	99	55	77.8	2.44	
Taneytown	105	56	80.0	2.39	
Van Bibber	98	57	77.7	1.95	
Westernport	97	48	73.9	2.61	
Westminster	102	46	73.8	1.06	
Massachusetts.					
Amherst	92	45	71.0	4.65	
Bedford	94	52	71.7	2.14	
Bluehill (summit)	95	50	71.4	3.02	
Cambridge	98	52	74.0	2.24	
Chestnuthill	98	52	73.8	2.68	
Cohasset	......	......	......	3.01	
Concord	97	48	71.8	2.18	
East Templeton*[1]	94	52	71.2	2.42	
Fallriver	94	55	73.0	3.19	
Fitchburg *a**[1]	94	55	72.5	2.63	
Fitchburg *b*	95	50	72.2	2.66	
Framingham	98	50	73.4	2.24	
Groton	94	48	70.8	3.21	
Hyannis	......	......	......	1.22	
Jefferson	......	......	......	3.53	
Lawrence	95	47	72.6	2.08	
Leeds	98	47	71.2	3.59	
Leominster	......	......	......	2.74	
Longplain	......	......	......	2.75	
Lowell *a*	94	53	73.6	2.65	
Lowell *b*	96	51	72.8	......	
Ludlow Center	90	40	67.2	4.49	
Middleboro	93	45	70.7	1.79	
Monson	93	49	71.8	4.53	
New Bedford *a*	89	54	71.2	2.57	
Pittsfield	91	44	70.0	2.12	
Plymouth*[1]	95	58	72.4	1.36	
Princeton	......	......	......	2.86	
Provincetown	91	56	71.0	1.72	
Salem	......	......	......	1.97	
Somerset*[1]	100	52	75.8	2.60	
South Clinton	......	......	......	3.80	
Springfield Armory	98	53	74.2	2.44	
Sterling	......	......	......	2.61	
Taunton *c*	94	46	70.8	3.06	
Westboro	97	50	73.6	2.44	
Weston	95	50	71.6	2.63	
Williamstown*[1]	90	57	70.1	5.56	
Winchendon	......	......	......	2.85	
Worcester *b*	93	51	71.8	3.49	
Michigan.					
Adrian	94	48	72.3	7.04	
Agricultural College	93	46	69.6	4.15	
Allegan	90	......	......	3.96	
Alma	95	41	70.2	3.58	
Ann Arbor	96	47	72.0	2.91	
Arbela	94	44	70.0	4.56	
Baldwin	92	38	63.7	3.00	
Ball Mountain	94	43	70.2	3.79	
Battlecreek	93	50	71.4	7.79	
Bay City	96	45	70.4	4.65	
Berlin	93	39	68.0	2.43	
Berrien Springs	93	45	71.6	5.85	
Big Point Sable*[10]	80	52	65.3	......	
Big Rapids	91	41	68.0	4.45	
Boon	87	37	63.2	8.75	
Calumet	87	43	63.2	4.43	
Carsonville	95	43	70.3	2.47	
Charlevoix	89	45	64.4	6.19	
Cheboygan	85	40	64.6	7.93	
Clinton	96	45	72.6	3.98	
Coldwater	93	47	71.7	8.72	
Deerpark	87	41	59.6	2.72	
Dundee	93	50	72.0	4.42	
Eagle Harbor	90	48	61.5	3.83	
East Tawas	93	40	66.4	2.95	
Eloise	96	48	73.3	2.03	
Ewen	......	......	......	3.60	
Fairview	93	46	72.2	4.14	
Fitchburg	94	44	71.2	4.19	
Flint	95	42	70.0	4.30	
Frankfort	86	50	68.9	4.54	
Gaylord	89	37	64.9	6.81	
Gladwin	93	38	68.0	3.40	
Grand Marais	90	40	61.8	4.39	

TABLE II.—*Climatological record of voluntary and other cooperating observers.*—Continued.

Stations.	Temperature. (Fahrenheit.)			Precipitation.	
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
Michigan—Cont'd.	°	°	°	*Ins.*	*Ins.*
Grand Rapids	92	51	72.2	3.63	
Grape	96	48	72.2	5.05	
Grayling	91	38	65.6	6.00	
Hanover	94	47	70.6	5.36	
Harbor Beach	97	42	68.6	1.60	
Harrison	92	42	67.4	3.89	
Harrisville	97	45	66.6	4.34	
Hart	95	45	68.8	3.64	
Hastings	93	45	70.3	7.33	
Hayes	94	41	69.2	1.62	
Highland Station	......	......	......	2.78	
Hillsdale	93	44	70.6	8.42	
Holland *[10]	83	55	70.1	......	
Howell	98	......	...	2.44	
Humboldt	87	31	59.6	6.58	
Ionia	95	42	70.8	3.70	
Iron River	86	35	62.4	5.50	
Ishpeming	86	31	61.9	6.64	
Isle Royal	76	30	51.4	......	
Ivan	89	41	65.1	6.36	
Jackson	98	48	73.2	3.66	
Jeddo	97	42	68.8	5.56	
Kalamazoo	92	50	72.0	7.81	
Lake City	88	40	65.8	5.22	
Lansing	93	49	70.4	5.09	
Lapeer	95	50	72.5	2.80	
Lathrop	90	34	62.2	4.89	
Lincoln	91	43	65.0	2.75	
Ludington	83	45	64.9	4.53	
Mackinac Island	80	43	62.5	7.32	
Mackinaw	90	44	63.8	8.96	
Madison	96	0	73.2	5.49	
Mancelona	90	32	65.2	7.16	
Manistique	77	42	60.8	6.95	
Menominee	92	48	68.3	6.87	
Middle Island *[10]	84	46	63.8	......	
Midland	97	42	70.2	1.87	
Mottville	90	46	69.2	7.56	
Mount Clemens	90	42	72.4	3.84	
Mount Pleasant	94	31	66.8	5.17	
Muskegon	86	50	69.2	1.92	
Newberry	80	30	56.2	3.88	
North Marshall	92	46	69.2	5.01	
Northport	87	49	64.9	5.76	
Old Mission	90	49	65.8	5.67	
Olivet	91	50	69.8	8.00	
Omer	95	......	......	1.65	
Ontonagon	91	42	62.7	4.16	
Ovid	94	46	70.6	4.33	
Owosso	96	45	71.3	4.73	
Petoskey	90	43	65.2	7.30	
Plymouth	97	45	74.3	3.47	
Port Austin	94	42	70.2	1.65	
Reed City	93	45	69.6	4.51	
Roscommon	94	30	68.0	......	
Saginaw	95	45	71.2	3.89	
St. Ignace	90	37	59.6	8.24	
St. Johns	94	48	71.6	3.54	
St. Joseph	93	50	71.4	4.67	
Somerset	98	47	70.5	4.67	
South Haven	87	53	71.3	7.24	
Thomaston	87	39	62.5	5.66	
Thornville	92	45	70.8	3.06	
Traverse City	95	44	66.9	7.93	
Vandalia	92	49	71.4	5.61	
Vassar	95	41	70.6	2.29	
Wasepi	90	49	70.4	7.15	
West Branch	92	40	68.8	4.28	
Wetmore	88	35	60.0	5.60	
Whitecloud	92	40	67.3	4.55	
Whitefish Point	86	40	57.4	4.72	
Ypsilanti	93	45	70.4	5.01	
Minnesota.					
Ada	100	41	66.5	1.58	
Albert Lea	92	48	71.0	6.57	
Alexandria	96	43	68.0	1.87	
Ashby	96	46	70.4	1.92	
Beardsley	97c	39	70.3	......	
Bemidji	90	44	64.7	5.11	
Bird Island	93	48	71.3	5.18	
Blooming Prairie	92	44	69.8	6.45	
Brainerd	91c	42c	64.6c	......	
Caledonia	90	49	69.8	7.87	
Camden	94	47	70.5	6.90	
Collegeville	95	47	69.8	3.37	
Crookston	95	47	67.0	3.68	
Deephaven	......	......	......	7.32	
Detroit City	92	40	67.2	4.55	
Faribault	92	44	71.1	6.29	
Farmington	92	50	70.1	7.83	
Fergus Falls	92	46	68.4	2.67	
Grand Marais	......	......	......	2.45	
Grand Meadow	93	46	71.4	7.66	
Hallock	88	38	65.0	2.21	
Hovland	......	......	......	2.70	
Lake Jennie	94	47	70.2	5.96	

Stations.	Temperature. (Fahrenheit.)			Precipitation.	
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
Minnesota—Cont'd.	°	°	°	*Ins.*	*Ins.*
Lakeside	93	52	70.6	6.91	
Lake Winnibigoshish	87	42	64.8	7.10	
Leroy	......	46	......	7.17	
Long Prairie	93	39	68.0	2.86	
Luverne	92	50	70.4	8.95	
Lynd	96	49	69.0	6.67	
Mapleplain	95	51	70.6	6.04	
Milaca	93	44	67.4	4.18	
Milan	97	46	69.8	5.29	
Minneapolis *a*	96	51	71.6	9.10	
Minneapolis *b* [1]	95	49	70.8	8.34	
Minnesota City *[1]	92*	50	71.8	13.19	
Morris	100	46	70.0	2.36	
Mount Iron	90	38	62.8	3.22	
Newfolden	90	33	62.6	3.66	
New London	100	48	70.1	3.50	
New Richland *[1]	92	54	70.6	......	
New Ulm	97	52	73.1	5.00	
Park Rapids	91	41	64.7	6.31	
Pine River	88	47	66.1	2.41	
Pipestone	94	49	69.2	5.99	
Pleasant Mounds	90c	51c	70.4c	7.14	
Pokegama Falls	88	37	63.4	3.65	
Redwing	......	......	......	4.43	
Reeds	......	......	......	5.78	
Rolling Green	90	50	70.4	7.35	
St. Charles	93	44	69.8	8.82	
St. Cloud	102	48	71.6	4.28	
St. Peter	90	51	71.4	4.25	
Sandy Lake Dam	91	42	64.5	3.27	
Shakopee	44	50	71.5	7.62	
Thief River Falls	....	......	......	2.98	
Tower	90	......	......	3.10	
Two Harbors	87	44	61.8	5.02	
Wabasha *[1]	96	54	71.0	8.61	
Willmar	94	49	69.7	5.88	
Willow River	89	43	66.4	5.67	
Worthington	90	50	69.2	5.41	
Zumbrota *[1]	92	43	72.2	......	
Mississippi.					
Aberdeen	100	64	81.0	4.92	
Agricultural College	99	64	81.9	6.22	
Austin	92	61	80.0	2.49	
Batesville	96	60	80.4	3.26	
Bay St. Louis	95	68	81.2	10.85	
Biloxi	93	70	81.7	7.31	
Booneville	90	62	78.8	2.49	
Brookhaven	98	65	81.6	11.06	
Canton	95	67	80.4	5.26	
Columbus *a*	......	......	......	5.21	
Columbus *b*	95	64	81.4	5.30	
Corinth	95	67	80.6	2.64	
Crystalsprings	97	67	81.0	4.91	
Edwards	98	70	82.8	7.86	
Fayette	91	68	79.2	9.40	
Fayette (near) *[1]	91	73	81.2	......	
Greenville *a*	95	69	82.0	6.20	
Greenville *b*	94	68	81.8	6.11	
Greenwood	95	70	82.3	8.70	
Hattiesburg	93	72	82.2	4.61	
Hazlehurst	96	68	81.3	5.69	
Hernando	95	63	81.0	1.99	
Holly Springs	94	65	80.5	3.75	
Jackson	96	60	77.5	5.93	
Kosciusko	94	61	80.4	6.70	
Lake	93	64	78.4	4.95	
Latonia	96	68	80.8	7.06	
Leakesville	97	60	80.1	6.83	
Logtown	94	69	80.8	8.05	
Louisville	98	60	79.2	8.88	
Macon	97	60	81.0	3.73	
Magnolia	96	70	82.4	16.67	
Natchez	96	68	81.2	6.90	
Okolona	97	65	82.0	6.91	
Palo Alto	95	66	80.1	4.59	
Pontotoc	90	63	78.9	4.61	
Port Gibson	96	67	81.6	5.90	
Ripley	92	61	78.5	5.73	
Shoccoe	90	72	80.3	5.58	
Stonington *[1]	90	68	78.1	......	
Thornton	......	......	......	5.91	
Tupelo	......	......	......	4.76	
Walnutgrove	92c	68c	80.1c	7.09	
Watervalley	......	......	......	7.89	
Waynesboro	94	68	79.8	5.05	
Woodville	95	68	81.0	11.63	
Yazoo City	98	68	81.8	7.57	
Missouri.					
Appleton City	102	56	80.0	4.01	
Arthur *[3]	......	66	77.2	2.19	
Avalon	96	57	76.8	3.11	
Bethany	97	48	76.0	3.79	
Birchtree	92	55	76.6	1.69	
Boonville	......	......	......	2.90	
Brunswick	93	52	75.6	2.80	
Carrollton	94	58	77.2	5.08	

Stations.	Temperature. (Fahrenheit.)			Precipitation.	
	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
Missouri—Cont'd.	°	°	°	*Ins.*	*Ins.*
Conception	91	58	75.4	8.33	
Cook Station	94	50	75.5	4.75	
Cowgill *[5]	94	60	77.8	4.64	
Darksville	95	56	75.4	0.95	
Downing	......	......	......	3.84	
East Lynne *[3]	......	56	73.2	5.21	
Edgehill *[5]	94	64	79.0	8.30	
Edwards	100	52	77.4	4.17	
Eldon	92	54	75.2	7.55	
Elmira	96	48	75.4	......	
Fairport	......	......	......	3.85	
Fayette	97	57	77.6	3.02	
Fulton	93	53	76.0	3.66	
Galena	......	......	......	3.09	
Gallatin *[1]	96	54	77.0	3.24	
Gayoso	99	59	81.4	4.01	
Glasgow	95	54	76.9	1.97	
Gorin	......	......	......	3.18	
Halfway	92	53	76.3	5.02	
Harrisonville	94	52	76.0	6.12	
Hazlehurst	......	......	......	2.67	
Hermann	......	......	......	4.10	
Houston	93	55	75.4	3.78	
Houstonia (near)	......	......	......	1.26	
Irena	....	......	......	5.61	
Ironton	93	51	75.7	5.28	
Jackson *[3]	93	66	76.6	6.80	
Jefferson City	98	55	77.8	6.31	
Kidder	98	55	76.6	3.65	
Koshkonong	95	59	78.2	3.64	
Lamar	98	55	78.0	8.10	
Lamonte	......	......	....	1.29	
Lebanon	92	57	76.6	6.90	
Lexington	95	52	77.1	6.73	
Liberty	93	52	75.7	5.58	
Louisiana	97	55	77.4	2.72	
McCune *[1]	96	65	77.0	1.54	
Macon	95	55	76.4	3.18	
Marblehill	94	53	76.8	6.77	
Marshall	95	50	75.8	1.55	
Maryville	99	54	77.0	7.65	
Mexico	96	55	77.4	4.59	
Miami *[5]	95	64	79.5	2.74	
Mineralspring	90	50	73.4	4.01	
Montreal	92	55	75.5	6.71	
Mount Vernon	98	54	78.0	6.65	
Neosho	92	50	75.4	4.65	
Nevada	......	......	......	8.41	
New Haven	95	57	77.7	4.65	
New Madrid	93	64	80.4	8.69	
New Palestine	94	56	76.4	4.16	
Oakfield	94	59	77.4	5.50	
Olden	......	50	......	2.76	
Oregon *a*	98	57	76.2	9.55	
Oregon *b*	94	59	78.2	9.75	
Palmyra *[5]	95	60	78.0	0.77	
Phillipsburg *[1]	94	64	76.2	4.80	
Pickering *[3]	......	50	70.4	7.01	
Pine Hill	......	......	......	2.88	
Poplarbluff	95	56	79.2	3.50	
Potosi	93	52	74.7	3.28	
Princeton	100	55	69.9	6.52	
Richmond	92	58	75.3	6.29	
Rockport	......	......	.....	5.66	
Rolla	......	......	......	4.46	
St. Charles	94	60	78.0	3.68	
St. Joseph	......	......	......	2.59	
Sarcoxie *[3]	......	64	76.3	5.88	
Sedalia	98	56	78.2	3.81	
Seymour	92	51	74.4	3.92	
Shelbina	......	......	......	3.70	
Sikeston	94	57	79.0	1.54	
Steffenville	96	55	76.1	2.36	
Sublett	97	52	76.0	1.79	
Trenton	95	56	77.1	2.63	
Unionville	98	58	78.0	3.77	
Vichy	92	59	75.6	4.89	
Warrenton	95	57	76.8	4.56	
Wheatland	......	......	.....	3.73	
Willowsprings	91	52	74.2	3.60	
Windsor	98	54	77.4	3.66	
Wylie	95	53	76.7	3.80	
Zeitonia	96	46	77.4	2.44	
Montana.					
Adel	94	30	59.8	0.94	
Billings	110	38	74.7	......	
Boulder	96	31	62.0	0.97	
Bozeman	96	36	63.4	1.82	
Butte	90	35	68.9	1.13	
Canyon Ferry	102	40	69.8	0.55	
Chester	103	....	......	0.50	
Chinook	104	46	70.2	0.64	
Columbia Falls	95	36	63.9	0.87	
Corvallis	100	39	66.4	0.50	
Crow Agency	101	40	70.0	0.39	
Dell	98	32	62.5	0.01	

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Montana—Cont'd.	°	°	°	*Ins.*	*Ins.*
Dillon	91	32	61.6	0.61	
Dupuyer	100	35	65.6	0.30	
Ekalaka	106	40	71.0	0.73	
Fort Benton	104	44	69.9	0.58	
Fort Logan	95	35	60.8	0.15	
Glasgow	113	42	71.0	0.20	
Glendive	111	43	72.4	0.47	
Glenwood	100	32	63.0	0.66	
Greatfalls	97	46	69.6	0.46	
Kipp	92	35	58.7	0.62	
Lewistown	105	36	65.1	0.55	
Livingston	98	41	66.4	0.01	
Martinsdale	102	34	64.2	1.00	
Marysville	95	30	63.1	0.80	
Parrot	102	38	66.8	0.39	
Plains	95	40	67.3	0.60	
Poplar	108	42	73.0	......	
Redlodge	93	35	62.4	0.00	
Ridge	105	45	69.8	1.41	
Ridgelawn	108	38	70.7	1.09	
St. Pauls	98	40	60.6	0.69	
Troy	96	39	63.7	0.67	
Twin Bridges	98	31	62.4	......	
Utica	98	37	66.2	0.70	
Wibaux	109	40	69.0	1.90	
Yale	97	35	66.0	0.87	
Nebraska.					
Agate	......	......	......	8.14	
Agee	......	......	......	6.96	
Albion	98[d]	50[d]	73.8[d]	3.50	
Alliance	......	......	......	2.70	
Alma	105	46	77.3	2.62	
Ansley	102	42	74.0	3.82	
Arapaho *[1]	105	61	81.5	2.45	
Arborville *[1]	104	56	73.8	3.89	
Arlington	......	......	......	6.53	
Ashland *a*	102	53	75.9	6.52	
Ashland *b*	......	......	......	6.66	
Ashton	......	......	......	6.27	
Auburn	96	53	76.2	5.33	
Aurora *[1]	99	60	77.2	3.60	
Bartley	......	......	......	2.98	
Beatrice	100	51	77.2	5.98	
Beaver	109	45	78.9	2.12	
Bellevue	......	......	......	5.56	
Benedict	......	......	......	5.00	
Benkleman	......	......	......	2.29	
Blair	100	53	75.0	5.26	
Bluehill	......	......	......	2.00	
Bradshaw	......	......	......	5.38	
Brokenbow *[1]	96	48	73.1	4.35	
Burchard	......	......	......	6.55	
Burwell	......	......	......	4.69	
Callaway	99	44	72.7	3.50	
Camp Clarke	102	43	72.0	1.64	
Central City	......	......	......	3.70	
Columbus	97	52	74.3	3.61	
Crete	99	55	75.8	5.85	
Culbertson	......	......	......	4.20	
Curtis	101	45	79.6	3.20	
David City	99	54	75.2	5.00	
Dawson	96	56	78.0	6.34	
Eden	......	......	......	7.10	
Edgar *a*	......	......	......	2.94	
Ericson	......	......	......	4.30	
Ewing	......	......	......	5.93	
Fairbury	103	58	77.5	4.37	
Fairfield	102	52	77.8	2.52	
Fairmont	103	53	76.4	6.35	
Fort Robinson	100	44	70.6	3.45	
Fremont	101	51	74.6	5.36	
Geneva	103	51	76.8	5.95	
Genoa	102	54	75.6	5.32	
Gering	98	40	71.0	4.14	
Gordon	......	......	......	3.70	
Gosper	......	......	......	3.35	
Gothenburg	102	40	75.6	2.94	
Grand Island *a*	......	......	......	3.99	
Grand Island *b*	105	49	76.6	4.02	
Greeley	......	......	......	5.33	
Haigler	......	......	......	2.55	
Hartington	100	52	72.8	8.09	
Harvard	102	52	75.8	7.28	
Hastings *[1]	99	60	77.1	5.66	
Hayes Center	......	......	......	4.24	
Hay Springs	96	46	70.3	3.19	
Hebron	101	52	76.9	4.23	
Hickman	......	......	......	6.79	
Holdrege *[1]	104	48	77.6	3.85	
Hooper *[1]	98	57	74.4	7.58	
Imperial	105	40	75.4	4.87	
Johnstown	......	......	......	4.05	
Kearney	......	......	......	3.32	
Kennedy	99	41	70.2	9.90	
Kimball	100	43	70.1	2.17	
Kirkwood *[1]	97[b]	55[d]	72.2[c]	6.78	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Nebraska—Cont'd.	°	°	°	*Ins.*	*Ins.*
Laclede	102	51	73.8	4.50	
Lexington	100	42	73.6	3.56	
Lincoln	98	54	77.0	5.83	
Lodgepole	98	42	70.2	3.00	
Loup	102	52	75.7	8.51	
Lynch	99	45	73.4	6.53	
Lyons	......	......	......	7.41	
McCook *[1]	99	56	77.6	3.07	
McCool	......	......	......	6.23	
Madison	97	51	74.6	3.30	
Madrid *[5]	103	43	76.8	2.25	
Marquette	......	......	......	3.95	
Merriman	......	......	......	3.05	
Minden *a*	103	45	75.6	1.92	
Minden *b*	......	......	......	1.56	
Monroe	......	......	......	3.50	
Nebraska City *b* *[1]	98	60	78.2	4.05	
Nebraska City *c*	......	54	......	4.18	
Nemaha *[1]	98	62	77.7	6.88	
Nesbit	98	42	71.8	5.75	
Norfolk	100	50	74.2	4.12	
North Loup	100	45	73.4	5.76	
Oakdale	101	50	74.2	4.80	
Odell	......	......	......	5.92	
O'Neill	101	43	71.8	4.93	
Ord	......	......	......	3.18	
Osceola	......	......	......	3.94	
Ough	......	......	......	3.21	
Palmer *[5]	104	58	82.9	5.25	
Palmyra *[1]	98	57	74.2	4.99	
Plattsmouth *a*	......	......	......	4.25	
Plattsmouth *b*	......	......	......	4.16	
Pleasanthill	......	......	......	7.92	
Ravenna *a*	101	47	75.5	4.36	
Ravenna *b*	......	......	......	3.75	
Redcloud *b* *[1]	102	54	79.6	2.98	
Republican *[1]	104	56	79.6	2.80	
Rulo	......	......	......	9.83	
St. Libory	......	......	......	4.38	
St. Paul	104	46	74.0	5.19	
Salem *[1]	92	60	78.7	5.36	
Santee	100	51	74.8	7.72	
Sargent	......	......	......	5.38	
Schuyler	......	......	......	3.99	
Seneca	......	......	......	4.25	
Seward	99	67	81.8	7.13	
Smithfield	......	......	......	4.21	
Spragg	......	......	......	5.36	
Springview	97	48	70.2	7.34	
Stanton *[1]	98	55	73.4	4.32	
State Farm	100	52	73.0	6.68	
Strang	......	......	......	5.91	
Stratton	......	......	......	3.30	
Superior *[5]	100	54	78.8	2.20	
Syracuse	......	......	......	6.80	
Tablerock	......	......	......	8.69	
Tecumseh *b*	99	55	78.0	5.65	
Tecumseh *c*	......	......	......	7.03	
Tekamah	99	53	75.0	5.96	
Thedford	......	......	......	5.28	
Turlington	99	54	75.6	5.08	
Valparaiso	......	......	......	7.80	
Wakefield	99	51	73.4	5.81	
Wallace	......	......	......	3.05	
Wauneta	......	......	......	3.40	
Weeping Water *[1]	97	51	71.2	4.83	
Wellfleet	105	46	78.6	1.30	
Westpoint	98	50	76.9	4.36	
Wilber *[1]	100	56	74.3	7.46	
Willard	......	......	......	3.59	
Wilsonville *[1]	103	55	75.2	3.07	
Winnebago	......	......	......	5.95	
Wisner	......	......	......	5.49	
Wymore *[1]	96	56	72.6	4.98	
York	......	......	......	4.47	
Nevada.					
Austin	91	44	68.6	0.79	
Battle Mountain	......	......	......	0.00	
Belmont	89	44	68.2	0.70	
Beowawe	......	......	......	1.00	
Candelaria	97	45	73.8	0.42	
Carlin *[1]	100	48	69.4	0.20	
Carson City	96	42	68.0	0.14	
Clover Valley	......	......	......	0.52	
Cranes Ranch	......	......	......	0.04	
Duck Valley	94	33	66.0	0.29	
Elko (near)	98	39	66.6	0.10	
Ely	95	35	68.0	1.15	
Empire Ranch	......	42	......	0.61	
Fenelon *[1]	95	49	73.1	1.25	
Halleck *[1]	100	49	70.6	......	
Hamilton	92	35	65.2	1.09	
Hawthorne	100	49	74.8	......	
Lee	......	......	......	0.10	
Lewers Ranch	95	40	70.0	1.25	
Los Vegas	113	59	85.7	0.23	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Nevada—Cont'd.	°	°	°	*Ins.*	*Ins.*
Martins	90	42	66.4	0.07	
Mill City	......	......	......	0.00	
Monitor Mill	98	36	67.8	0.62	
Palisade *[1]	99	51	69.4	0.15	
Palmetto	95	39	68.6	2.35	
Reno State University	96	45	70.0	0.18	
Sodaville	102	58	80.2	0.08	
Tecoma	......	......	......	T.	
Toano *[1]	99	52	72.6	......	
Tybo	100	44	73.0	0.70	
Wadsworth	......	......	......	0.08	
Wells *[1]	98	52	71.0	......	
New Hampshire.					
Alstead	......	......	......	2.98	
Berlin Mills	91	40	66.2	3.14	
Bethlehem	88	44	67.0	4.13	
Brookline *[1]	97	56	73.4	2.16	
Claremont	98	44	70.4	1.94	
Concord	96	43	70.6	1.74	
Durham	97	48	71.8	1.49	
Grafton	95	39	67.9	3.15	
Hanover	95	42	69.0	2.40	
Keene	96	42	69.6	4.39	
Littleton	89	46	67.0	3.59	
Nashua	97	46	72.6	1.49	
Newton	96	43	71.0	1.88	
North Conway	99	44	70.0	1.90	
Peterboro	94	40	69.6	2.21	
Plymouth	97	41	69.8	3.22	
Sanbornton	95	43	68.3	2.23	
Stratford	91	42	66.9	4.78	
Warner	......	......	......	3.53	
New Jersey.					
Asbury Park	98	54	73.8	6.08	
Bayonne	100	56	77.2	6.42	
Belvidere	99	50	75.3	5.37	
Bergen Point	98	55	76.3	6.62	
Beverly	101	52	78.2	3.49	
Billingsport *[1]	97	68	78.2	3.42	
Bridgeton	102	54	79.8	2.43	
Camden	96	57	76.6	3.61	
Cape May C. H.	101	54	77.8	1.11	
Charlotteburg	98	44	71.5	4.78	
Chester	91	50	72.1	5.60	
Clayton	101	50	77.8	2.53	
College Farm	98	50	76.6	6.94	
Deckertown	96	47	73.2	4.22	
Dover	98	50	74.1	4.50	
Egg Harbor City	101	48	77.0	2.80	
Elizabeth	101	53	77.4	6.52	
Flemington	99	51	76.2	5.89	
Freehold	95	50	74.2	7.12	
Friesburg	101	49	78.0	3.27	
Hammonton	......	......	......	2.86	
Hanover	98	53	74.2	4.17	
Hightstown	96	54	76.4	7.21	
Imlaystown	95	53	76.8	6.45	
Lambertville	101	51	77.4	6.28	
Layton	100	42	72.9	3.62	
Lebanon	......	......	......	7.06	
Moorestown	97	53	76.4	3.96	
Mount Pleasant	......	......	......	2.85	
Newark	101	55	75.9	6.12	
New Brunswick	101	53	77.9	7.18	
Newton	98	48	72.6	5.04	
Ocean City	95	52	71.6	1.92	
Oceanic	93	50	75.0	6.92	
Paterson	101	54	76.8	4.72	
Perth Amboy	100	56	78.0	6.97	
Plainfield	101	51	75.9	5.79	
Rancocas	......	......	......	4.31	
Rivervale	98	46	73.6	6.10	
Rocktown	......	......	......	4.02	
Roseland	98	46	73.7	6.48	
Salem	102	54	79.0	3.59	
Somerville	103	47	77.0	5.18	
South Orange	97	54	75.2	5.72	
Toms River	101	44	75.0	4.21	
Trenton	96	56	77.0	5.40	
Tuckerton	102	46	76.2	2.56	
Vineland	104	51	78.2	2.46	
Woodbine	98	54	77.7	3.42	
New Mexico.					
Albert	100	54	75.9	2.32	
Albuquerque	99	48	79.1	0.13	
Alma	98	43	74.2	1.12	
Aztec	97	45	73.2	0.00	
Bellranch	......	......	......	2.43	
Bluewater	105	40	73.6	T.	
Cambray	......	......	......	1.67	
Deming	......	......	......	2.10	
East Lasvegas	87	52	69.0	2.70	
Engle	98	48	77.4	0.31	
Espanola	96	44	74.1	1.07	
Folsom	94	48	70.5	2.40	
Fort Bayard	95	49	73.6	2.49	

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
New Mexico—Cont'd.	°	°	°	*Ins.*	*Ins.*
Fort Stanton	95	40	69.6	1.98	
Fort Union	90	40	67.0	3.08	
Fort Wingate	98	50	73.5	0.25	
Gage	......	......	......	1.65	
Galisteo	98	49	74.6	0.86	
Gallinas Spring	102	52	76.2	2.47	
Hillsboro	98	54	78.5	1.46	
Horse Springs	99	45	73.5	3.05	
Las Vegas Hotsprings	......	......	......	3.07	
Lordsburg	......	......	......	0.38	
Lower Penasco	98	55	72.2	4.85	
Lyons Ranch	105	48	78.2	2.14	
Mesilla Park	103	53	80.2	1.52	
Raton	95	45	69.0	0.96	
Roswell	99	58	76.6	2.85	
Shattucks Ranch	95	45	68.6	7.16	
Socorro	102	53	80.6	0.47	
Springer	97	40	69.8	2.82	
Strauss	......	......	......	1.73	
Whiteoaks	93	48	73.5	1.67	
Winsors Ranch	88	32	60.0	2.26	
Woodbury	99	43	74.6	1.82	
New York.					
Adams	......	......	......	3.14	
Addison	97	39	72.6	1.93	
Akron	......	......	......	3.50	
Alden	91	......	......	5.28	
Alfred	......	......	......	4.02	
Angelica	94	35	69.6	4.04	
Appleton	92	50	70.2	4.29	
Arcade	89	40	67.8	5.45	
Atlanta	94	40	69.3	3.08	
Auburn	95	45	73.4	5.10	
Avon	96	47	72.4	3.40	
Axton	87	38	64.8	4.79	
Baldwinsville	94	49	72.2	6.05	
Beedes	89	44	66.2	3.08	
Big Sandy*[10]	84	56	69.2	......	
Bisbe Lodge	......	......	......	4.18	
Blue Mountain Lake	......	......	......	3.10	
Bolivar	94	33	67.5	4.01	
Bouckville	90	47	68.4	5.09	
Boyds Corners	......	......	......	4.36	
Brockport	92	46	71.0	4.47	
Caldwell	94	50	70.0	4.00	
Canajoharie	92	45	70.4	2.85	
Canton	91	42	68.8	2.24	
Carmel	94	56	75.6	3.87	
Carvers Falls	93	47	69.0	3.72	
Catskill	101	53	74.6	1.33	
Cedarhill	98	49	73.2	2.54	
Charlotte*[10]	98	55	70.7	......	
Chenango Forks	......	......	......	2.45	
Cooperstown	90	46	68.2	6.61	
Cortland	96	47	73.4	4.78	
Cutchogue	95	53	71.3	4.17	
Dekalb Junction	......	......	......	2.50	
Easton	......	......	......	2.41	
Elba	92	44	71.4	5.65	
Elmira	98	49	74.0	3.48	
Fleming	92	48	73.2	6.87	
Franklinville	89	36	67.8	5.85	
Fulton	......	......	......	5.60	
Gabriels	86	42	64.6	4.92	
Glens Falls	96	48	71.8	3.66	
Gloversville	96	46	69.6	2.14	
Greenwich	97	45	71.4	2.88	
Haskinville	......	......	......	3.68	
Hemlock	90	50	72.4	3.79	
Honeymead Brook	94	46	72.8	5.02	
Honnedaga Lake	......	......	......	5.56	
Hoosick Falls	......	......	......	4.27	
Humphrey	88	42	67.6	4.48	
Indian Lake	89	40	66.2	4.45	
Ithaca	96	46	72.0	2.41	
Jamestown	90	44	69.8	4.68	
Jay	98	45	69.0	1.85	
Keene Valley	98	44	69.0	2.52	
King Ferry	......	......	......	3.08	
King Station	......	......	......	2.88	
Liberty	90	47	71.4	......	
Littlefalls	98	48	69.6	5.42	
Lockport	89	53	72.0	4.15	
Lowville	89	41	68.4	4.19	
Lyndonville	......	......	......	4.55	
Lyons	95	50	72.4	3.46	
Mayle	......	......	......	3.86	
Middletown	95	51	73.3	6.05	
Mohonk Lake	90	51	71.8	4.63	
Moira	89	48	69.8	3.46	
Mount Hope	101	52	75.0	4.27	
Newark Valley	......	......	......	3.98	
New Lisbon	92	37	67.6	7.27	
North Germantown	......	......	......	2.68	
North Hammond	90	54	70.2	2.79	
North Lake	86	42	64.4	4.94	
New York—Cont'd.	°	°	°	*Ins.*	*Ins.*
Number Four	84	37	64.4	5.65	
Ogdensburg	86	50	69.4	3.67	
Old Chatham	......	......	......	3.16	
Oneonta	96	44	71.9	5.14	
Oxford	96	39	71.0	3.72	
Palermo	93	47	69.8	3.10	
Penn Yan	99	47	73.6	3.91	
Perry City	98	43	71.5	2.66	
Phœnix	......	......	......	5.86	
Plattsburg Barracks	99	40[f]	69.2[e]	1.79	
Port Byron	92	45	71.8	4.91	
Port Jervis	97	48	73.6	4.40	
Red Hook	......	......	......	2.47	
Richmondville	......	49	......	5.63	
Ridgeway	98	47	70.8	4.00	
Rome	90	50	67.8	10.22	
Romulus	95	48	73.0	3.63	
Rose	......	......	......	5.58	
St. Johnsville	96	45	70.8	3.72	
Salisbury Mills	......	......	......	4.16	
Saranac Lake	87	44	65.0	4.28	
Saratoga Springs	94	40	70.8	2.16	
Schenectady	100	52	73.6	1.67	
Schenevus	......	......	......	7.78	
Scottsville	......	......	......	5.05	
Setauket	95	54	74.1	5.06	
Shortsville	94	47	71.6	3.42	
Skaneateles	......	......	......	6.18	
South Canisteo	91	40	68.4	4.10	
Southeast Reservoir	......	......	......	3.91	
South Kortright	95	37	68.4	2.84	
Straits Corners	98	38	70.8	4.17	
Ticonderoga	98	50	72.8	1.86	
Volusia	91	44	69.2	5.21	
Walton	94	39	70.9	5.73	
Wappingers Falls	99	50	75.0	4.00	
Warwick	......	......	......	4.30	
Watertown	90	47	70.1	2.34	
Waverly	98	40	72.6	3.07	
Wedgwood	94	46	72.0	3.19	
West Berne	98	45	72.7	3.15	
West Chazy	92	48	69.2	......	
Westfield *a*	92	46	71.8	5.75	
Westfield *b*	92	49	67.5	5.40	
Westfield *c*	89	53	71.8	4.70	
Williamson	......	......	......	4.09	
Windham	92	40	66.5	2.26	
North Carolina.					
Abshers	96	50	77.8	7.43	
Asheville	......	......	......	1.99	
Biltmore	92	56	74.6	2.10	
Bryson City	......	......	......	2.88	
Chapelhill	107	58	81.2	6.38	
Cherryville	97	58	78.9	2.25	
Currituck	......	......	......	2.42	
Edenton	100	60	82.3	4.40	
Fairbluff	......	......	......	4.04	
Fayetteville	101	59	80.7	2.56	
Goldsboro	101	62	81.8	6.86	
Greensboro	97	59	78.8	6.00	
Henderson	100	58	79.7	4.95	
Hendersonville	90	50	73.4	5.75	
Henrietta	96	65	79.9	2.79	
Highlands	84	46	67.5	8.04	
Horse Cove	85	54	71.6	9.43	
Kinston	105	58	83.6	3.33	
Linville	83[c]	44[c]	67.2[c]	3.99	
Littleton	102	56	80.4	5.84	
Louisburg	101	58	81.0	7.13	
Lumberton	99	65	82.9	3.00	
Marion	100	53	78.2	3.52	
Marshall	94	51	75.8	1.49	
Mocksville	98	61	81.1	2.88	
Moncure	100	58	80.5	2.27	
Monroe	100	53	78.9	6.95	
Mountairy	97	53	76.6	3.52	
Murphy	......	......	......	4.04	
Newbern	98	63	81.8	6.46	
Oakridge	90	54	79.4	4.02	
Patterson*[1]	90	52	72.3	......	
Pittsboro	101	56	80.6	2.17	
Rockingham	101[a]	59[a]	81.7[a]	2.08	
Roxboro	100	57	79.0	6.72	
Salem	100	56	80.2	2.90	
Salisbury	101	59	81.2	3.52	
Saxon	100	54	79.2	5.77	
Selma	105	57	83.4	3.33	
Settle	100	54	79.0	2.43	
Sloan	99	61	79.7	2.56	
Soapstone Mount	99	52	78.4	1.95	
Southern Pines *a*	105	60	83.4	2.56	
Southern Pines *b*	......	......	......	2.74	
Southport	92	68	82.3	1.11	
Springhope*[1]	97	63	79.2	4.99	
Tarboro	105	57	83.4	2.02	
Washington	104	61	83.7	4.06	
North Carolina—Cont'd	°	°	°	*Ins.*	*Ins.*
Waynesville	90	48	71.8	3.55	
Weldon *a*	100	60	80.8	3.18	
Weldon *b*	......	......	......	3.16	
North Dakota.					
Amenia	101	41	68.8	1.72	
Ashley	103	40	69.2	1.12	
Berlin	101	41	66.8	4.83	
Buxton	96	43	66.2	1.56	
Churchs Ferry	89	39	64.2	4.04	
Coalharbor	98	44	69.0	0.37	
Devils Lake	91	42	66.5	3.29	
Dickinson	104	41	71.0	1.19	
Donnybrook	......	......	......	3.50	
Dunseith	90	40	62.8	2.73	
Ellendale	98	44	70.1	3.46	
Falconer	98	42	70.1	1.25	
Fargo	101	40	67.1	3.91	
Forman	100	42	70.2	2.16	
Fort Yates	106	49	72.8	0.58	
Fullerton	100	41	69.2	3.52	
Gallatin	100	37	66.7	1.28	
Glenullin	102	43	71.3	0.72	
Grafton	93	44	66.2	......	
Hamilton	97	35	65.2	1.89	
Hannaford	100	44	67.8	1.12	
Jamestown	108	39	68.3	2.74	
Larimore	100	42	65.8	1.94	
McKinney	93	36	65.0	3.69	
Mayville	98	45	69.0	1.76	
Medora	107	43	73.4	0.80	
Melville	98	44	67.4	2.35	
Milton	84	39	63.0	2.80	
Minnewaukon	91	41	66.2	2.49	
Minot	99	40	67.3	2.20	
Minto	95	39	66.2	2.12	
Napoleon	102	47	69.0	3.44	
New England	100	38	69.6	......	
Oakdale	97	40	68.5	......	
Pembina	90	37	64.4	2.05	
Portal	97	36	66.6	2.30	
Power	102	39	67.8	0.87	
St. John	84	44	62.7	4.89	
Sheyenne	92	42	66.8	3.32	
Steele	102	40	69.8	1.47	
Towner	95	33	63.8	4.84	
University	93	45	67.2	1.17	
Wahpeton	98	42	70.1	2.62	
Willow City	98	35	65.6	2.88	
Ohio.					
Akron	95	47	72.7	6.08	
Annapolis	99	41	73.7	3.40	
Ashland	95	45	73.6	7.41	
Ashtabula	93	50	71.1	5.65	
Atwater	......	......	......	8.17	
Bangorville	98	47	74.4	3.84	
Bellefontaine	90	52	73.2	3.76	
Bement	......	......	......	3.85	
Benton Ridge	96	45	73.2	4.45	
Bethany	101	51	76.0	4.24	
Bigprairie	93	46	73.0	5.08	
Binola	......	......	......	4.61	
Bladensburg[f]	98	42	74.1	3.87	
Bloomingburg	96	50	74.8	2.93	
Bowling Green	95	47	72.8	3.76	
Bucyrus	97	44	73.2	3.40	
Cambridge	97	41	72.6	2.04	
Camp Dennison	97	54	77.2	4.43	
Canal Dover	97	43	74.2	7.17	
Canton	95	48	73.6	4.91	
Cardington	100	43	74.7	4.63	
Cedarville	......	......	......	3.67	
Celina	93	45	72.6	2.38	
Circleville	94	50	74.8	5.02	
Clarksville	95	51	75.4	3.99	
Cleveland *a*	91	50	72.2	6.30	
Cleveland *b*	92	51	73.2	5.23	
Clifton	100	46	75.8	5.14	
Coalton	98	46	75.3	8.15	
Colebrook	94	41	74.2	6.32	
Dayton *a*	......	......	......	3.35	
Dayton *b*	98	50	76.4	3.81	
Defiance	92	47	71.5	6.08	
Delaware	98	43	74.4	3.89	
Demos	96	49	74.0	1.79	
Elyria	96	47	73.0	5.69	
Findlay	98	47	75.0	5.84	
Frankfort	96	45	75.0	3.53	
Garrettsville	98	40	71.6	5.92	
Granville	96	43	74.2	4.55	
Gratiot	93	46	73.8	3.94	
Green	97	52	76.8	3.95	
Greenfield	96	56	76.6	3.40	
Greenhill	92	41	71.3	4.67	
Greenspring	94	......	......	5.80	
Greenville	89	50	72.2	3.61	
Hanging Rock	98	54	76.8	6.26	

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
	°	°	°	*Ins.*	*Ins.*
Ohio—Cont'd.					
Hedges	99	45	74.8	4.75	
Hillhouse	94	38	70.5	6.02	
Hillsboro	93	48	73.5	4.82	
Hiram	95	45	71.6	4.99	
Hudson	100	41	72.7	4.73	
Jacksonboro	96	55	77.0	8.40	
Kenton	99	51	75.8	3.67	
Killbuck	96	40	73.8	4.90	
Lancaster	96	46	75.0	4.22	
Leipsic	96	45	73.0	4.80	
Logan	......	......	......	1.82	
Lowell	100	46	75.5	......	
McConnelsville	98	46	74.7	3.44	
Mansfield	......	......	......	7.88	
Marietta	93	52	76.2	7.17	
Marion	98	47	75.0	3.13	
Medina	95	44	73.2	5.48	
Milfordton	95	44	73.2	5.23	
Milligan	98	44	73.7	2.22	
Millport	92	42	71.4	4.89	
Montpelier	93	47	71.9	6.35	
Napoleon	91	50	72.7	3.48	
Neapolis	......	......	......	5.89	
New Alexandria	95	49	74.0	4.65	
New Berlin	97	45	72.6	5.13	
New Bremen	95	51	75.0	2.37	
New Holland	96	49	75.6	5.25	
New Paris	89	52	73.1	5.08	
New Richmond	101	55	77.8	3.18	
New Waterford	95	44	73.0	7.69	
North Lewisburg	99	46	74.6	3.70	
North Royalton	100	45	73.9	5.32	
Norwalk	100	47	74.0	7.27	
Oberlin	98	45	73.0	5.97	
Ohio State University	95	47	75.0	3.27	
Orangeville	95	39	71.6	3.93	
Ottawa	95	44	74.6	5.88	
Pataskala	99	44	75.1	2.77	
Perry	......	......	......	5.93	
Philo	98	45	74.0	2.50	
Plattsburg	93	51	74.0	5.80	
Pomeroy	97	51	76.2	2.31	
Portsmouth *a*	......	......	......	2.94	
Portsmouth *b*	99	52	78.4	2.94	
Pulse	......	......	......	2.64	
Richwood	103	55	78.2	3.06	
Ripley	96	52	76.2	1.91	
Rittman	94	44	72.6	6.62	
Rockyridge	97	49	73.7	4.23	
Shenandoah	96	45	73.0	8.14	
Sidney	100	50	75.8	2.70	
Sinking Spring	96	49	75.4	3.25	
Springboro	......	......	......	5.58	
Strongsville	......	......	......	4.73	
Thurman	99	51	75.8	2.89	
Tiffin	98	50	73.8	7.55	
Upper Sandusky	94	43	74.1	4.37	
Urbana	91	50	73.7	2.42	
Vermillion	95	48	72.2	6.10	
Vickery	96	47	73.6	5.89	
Walnut	......	......	......	3.47	
Warren	96	42	71.5	6.10	
Warsaw	97	44	72.8	6.04	
Wauseon	93	47	72.6	5.71	
Waverly	99	51	77.7	4.40	
Waynesville	95	50	74.2	5.12	
Wellington	99	46	74.4	6.45	
Westerville	93	47	73.8	3.66	
Willoughby	......	......	......	5.10	
Wooster	95	44	72.6	5.65	
Youngstown	......	......	......	6.54	
Zanesville	......	......	......	2.96	
Oklahoma.					
Arapaho	98	60	79.6	4.49	
Beaver	98	57	80.7	1.54	
Burnett	99	59	79.4	2.61	
Clifton	100	59	79.8	2.97	
Fort Reno	96	60	78.8	9.15	
Fort Sill	97	62	78.2	5.40	
Guthrie	96	64	80.0	2.43	
Hennessey	97	59	80.0	4.67	
Jefferson	101	58	79.4	3.04	
Jenkins	96	56	78.7	2.12	
Kingfisher	98	60	80.1	4.68	
Newkirk	102	61	80.6	4.25	
Norman	96	60	77.6	8.30	
Osage	101	57	79.8	2.67	
Prudence	101	55	81.2	2.86	
Sac and Fox Agency	100	55	78.0	1.38	
Stillwater	97	62	80.1	2.69	
Taloga	98	54	77.6	3.40	
Waukomis	100	60	80.4	4.56	
Wood	95	50	75.5	4.00	
Oregon.					
Albany *a**[1]	98	56	70.3	0.00	
Albany *b*	......	......	......	0.23	
Oregon—Cont'd.					
Alpha	98	43	63.0	0.23	
Ashland *b*	102	40	68.6	0.00	
Aurora*[1]	93	55	68.6	0.28	
Aurora (near)	93	44	63.0	0.13	
Bandon	70	51	59.8	0.12	
Bay City	77	43	59.6	1.26	
Beulah	101	33	67.4	0.15	
Blalock	105	52	76.6	0.00	
Brownsville*[1]	98	56	69.9	0.03	
Bullrun	88	48	64.0	1.71	
Burns	99	35	66.8	0.00	
Cascade Locks	95	48	67.4	0.26	
Comstock*[1]	96	54	66.5	0.15	
Coquille	......	......	......	0.08	
Corvallis	95	41	64.6	0.13	
Dayville	100	41	68.2	0.41	
Ella	......	......	......	T.	
Fairview	90	50	68.6	0.20	
Falls City	93	40	63.2	0.09	
Gardiner	86	48	61.8	0.15	
Glenora	95	41	62.8	1.12	
Government Camp	85	36	55.8	0.79	
Grants Pass	102	40	68.1	0.00	
Happy Valley	97	26	62.9	0.06	
Hare	82	46	58.8	0.40	
Hood River (near)	98	45	67.6	0.00	
Jacksonville	101	43	70.4	0.00	
Joseph	93	31	63.0	0.02	
Junction City*[1]	98	52	67.2	0.08	
Kerby	105	42	68.6	0.00	
Lafayette*[1]	100	58	69.8	0.13	
Lonerock	99	29	60.0	0.10	
McMinnville	96	40	64.8	0.18	
Merlin*[1]	101	60	75.8	0.00	
Monmouth *a**[1]	93	54	68.1	0.23	
Monroe	95	43	65.7	0.10	
Mount Angel	93	48	66.8	0.34	
Nehalem	......	......	......	1.24	
Newbridge	103	38	67.6	0.00	
Newport	69	45	57.6	0.43	
Pendleton	106	44	73.7	0.07	
Prineville	105	29	64.8	0.03	
Riddles*[1]	100	50	69.3	0.00	
Riverside	104	37	67.9	0.00	
Salem *b*	98	45	69.2	0.62	
Sheridan*[1]	90	50	66.8	0.05	
Silverlake	98[c]	26[c]	61.6[c]	T.	
Silverton*[1]	92	60	68.2	0.32	
Siskiyou*[1]	93	54	70.2	0.00	
Sparta	98	33	65.4	0.01	
Springfield*[1]	91	53	67.7	0.16	
Stafford	94[d]	45[d]	66.0[d]	0.38	
The Dalles	100	47	71.5	T.	
Tillamook	......	......	......	0.77	
Toledo	99	42	61.0	0.75	
Umatilla	......	......	......	T.	
Vale	101	36	68.6	0.19	
Vernonia	98	38	59.3	0.05	
Westfork*[1]	100	56	70.2	0.00	
Weston	102	39	69.0	0.07	
Williams	97	39	66.0	0.00	
Pennsylvania.					
Altoona	96[g]	45[g]	73.3[g]	3.25[g]	
Athens	99	43	73.8	2.70	
Beaver Dam	......	......	......	3.59	
Bethlehem	......	......	......	5.11	
Brookville	......	......	......	6.08	
Browers Lock	......	......	......	4.79	
Butler	95	42	71.8	7.52	
Carlisle	102	50	77.3	4.20	
Cassandra	92	42	68.9	6.73	
Centerhall	......	......	......	3.48	
Chambersburg	103	49	76.7	3.10	
Coatesville	100	50	78.2	5.31	
Confluence	......	44	......	8.26	
Coopersburg	98	54	75.6	6.76	
Davis Island Dam	......	......	......	3.21	
Derry Station	102	46	74.9	5.84	
Driftwood	......	......	......	3.48	
Duncannon	......	......	......	3.66	
Dushore	95	39	70.8	4.68	
East Bloomsburg	......	......	......	3.26	
East Mauch Chunk	103	46	75.0	7.87	
Easton	97	51	76.1	6.83	
Ellwood Junction	......	......	......	7.88	
Emporium	94	38	70.6	4.48	
Ephrata	103	52	77.4	6.23	
Everett	99[e]	44[e]	72.6[e]	5.70	
Forks of Neshaminy*[1]	95	60	76.8	6.12	
Franklin	94	41	70.9	5.35	
Freeport	......	......	......	6.66	
Girardville	......	......	......	6.96	
Greensboro	94	50	74.0	7.15	
Hamburg	......	......	......	5.30	
Hawthorn	95	43	72.5	6.05	
Hews Island Dam	......	......	......	3.91	
Pennsylvania—Cont'd.					
Huntingdon *a*	102	43	74.8	2.35	
Huntingdon *b*	......	......	......	1.33	
Irwin	......	......	......	3.81	
Johnstown	96	45	74.2	4.88	
Keating	......	......	......	3.25	
Kennett Square	99	52	76.9	4.04	
Lawrenceville	95	40	70.4	3.50	
Lebanon	101	49	76.2	5.43	
Leroy	94	43	72.0	4.06	
Lewisburg	102	45	75.4	3.26	
Lockhaven *a*	102	45	77.0	2.77	
Lockhaven *b*	......	......	......	3.08	
Lock No. 4	......	......	......	4.92	
Lycippus	92	47	73.0	6.11	
Mifflin	......	......	......	3.91	
Oil City	......	......	......	6.39	
Parker	......	......	......	5.17	
Philadelphia	99	58	79.2	4.69	
Quakertown	104	50	76.6	6.64	
Reading[2]	......	......	76.5	5.11	
Renovo *a*	......	......	......	1.88	
Renovo *b*	97	45	74.6	1.81	
Saegerstown	98	39	69.5	4.77	
St. Marys	93	43	70.2	6.18	
Scranton	97	41	72.6	4.63	
Selinsgrove	101	46	76.0	3.74	
Shawmont	......	......	......	4.56	
Sinnamahoning	......	......	......	0.34	
Smethport	93	35	68.9	3.65	
Somerset	96	38	69.5	4.31	
South Eaton	95	47	72.4	4.09	
State College	96	50	73.5	3.36	
Sunbury	......	......	......	1.70	
Swarthmore	97	57	78.0	4.52	
Swiftwater	92	40	69.2	4.64	
Towanda	96	44	72.6	3.49	
Troutrun	......	......	......	4.51	
Uniontown	98	47	73.6	6.55	
Warren	90	43	68.2	6.07	
Wellsboro	95	40	70.4	2.90	
Westchester	97	55	77.0	5.15	
West Newton	......	......	......	4.57	
Wilkesbarre	100	47	74.6	5.74	
Williamsport	98	49	75.7	2.57	
York	103	47	77.7	2.36	
Rhode Island.					
Bristol	88	58	71.2	2.67	
Kingston	95	49	71.6	2.13	
Pawtucket	100	56	78.0	1.60	
Providence *a*	100	56	77.1	2.04	
Providence *c*	97	54	74.0	2.13	
South Carolina.					
Allendale	94	70	81.4	4.97	
Batesburg	104	68	83.1	2.29	
Beaufort	96	71	81.8	6.45	
Blackville	100	65	84.9	6.63	
Calhoun Falls	......	......	......	3.13	
Camden	......	......	......	6.42	
Cheraw *a*	100	61	81.7	4.74	
Cheraw *b*	......	......	......	5.04	
Clemson College	98	57	79.5	2.59	
Conway	......	......	......	4.06	
Darlington	......	......	......	2.25	
Edisto	......	......	......	3.83	
Effingham	......	......	......	4.33	
Florence	99	67	83.4	3.61	
Gaffney	......	......	......	4.50	
Georgetown	98	67	83.0	4.05	
Gillisonville	103	65	82.4	3.75	
Greenville	93	60	77.5	2.23	
Greenwood	101	62	82.6	1.05	
Holland	94	56	77.5	3.35	
Kingstree *a*	96	68	80.4	6.77	
Kingstree *b*	......	......	......	6.85	
Liberty	98	60	80.0	5.90	
Little Mountain	101	66	82.5	2.71	
Longshore	101	65	82.0	4.12	
Pinopolis*[1]	95	71	79.7	3.75	
St. George	98	67	82.2	4.24	
St. Matthews	98	69	82.2	11.29	
St. Stephens	......	......	......	4.72	
Santuck	99	59	80.4	4.33	
Shaws Fork	......	......	......	3.48	
Smiths Mills	......	......	......	7.53	
Societyhill	98	69	82.1	2.15	
Spartanburg	97	58	79.8	2.08	
Statesburg	101	69	82.4	2.87	
Summerville	94	69	79.8	4.88	
Temperance	102	61	82.3	2.80	
Trenton	95	69	81.6	4.08	
Trial	96	65	78.6	5.75	
Walhalla	93	55	77.0	1.67	
Winnsboro	92	65	78.0	6.18	
Winthrop College	100	59	81.0	3.28	
Yemassee	100	70	84.2	4.61	
Yorkville	100	68	82.2	2.34	

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
South Dakota.	°	°	°	*Ins.*	*Ins.*
Aberdeen	101	42	73.6	2.62	
Academy	103	48	74.0	8.40	
Alexandria	99	45	72.3	8.00	
Armour	99	45	72.0	9.30	
Ashcroft	110	46	71.0	2.82	
Bowdle	104	42	69.9	1.40	
Brookings	94	44	68.2	4.94	
Canton	97	49	72.7	10.53	
Centerville				12.54	
Chamberlain	99	49	74.2	5.91	
Clark	96	46	68.9	8.45	
Desmet	94	42	67.2	5.46	
Doland	102	42	70.8	7.52	
Elkpoint	100	51	74.2	10.01	
Farmingdale				1.52	
Faulkton	100	42	71.3	1.52	
Flandreau	95	47	68.6	6.47	
Forestburg	100	45	73.5	3.92	
Forest City	115	52	76.3	2.45	
Fort Meade	104	50	71.7	2.05	
Gannvalley	101	46	72.6	5.10	
Gary	98	51	71.8	6.42	
Grand River School		40		0.65	
Greenwood	100	48	75.7	7.51	
Hartman	94	48	69.8	8.84	
Highmore				2.69	
Hitchcock				6.35	
Hotch City	101	41	72.3	4.92	
Hot Springs	103	42	71.0	0.50	
Howard	96	46	70.0	7.93	
Interior	111	54	75.6	3.30	
Ipswich	103	45	72.5	2.15	
Kimball	97			5.83	
Leola	100			3.04	
Leslie	108	44	74.2	1.16	
Mellette	101	42	70.8	2.90	
Menno	100	48	73.2	10.52	
Millbank	100	44	69.3	3.65	
Oelrichs	106	47	73.4	1.90	
Parker	97	48	71.7	11.67	
Plankinton	98	43	72.6	5.78	
Redfield	102	41	70.5	3.97	
Rochford	100	34	62.2	1.80	
Rosebud	99	46	68.3	6.10	
St. Lawrence	103	45	72.0	4.00	
Shiloh	103	50	71.9	0.98	
Silver City				1.39	
Sioux Falls	98	44	70.1	9.11	
Sisseton Agency	96[c]	48[c]	69.8[c]	2.23	
Spearfish	102	52	69.8	2.53	
Tyndall	98[c]	51[l]	73.6[b]	7.26	
Watertown	97	41	68.0	6.73	
Waubay	95	43	68.0	4.61	
Wentworth	94	48	69.8	6.91	
Wolsey				5.27	
Tennessee.					
Andersonville	94	54	77.4	5.29	
Arlington	94	61	79.8	2.78	
Ashwood	92	58	78.2	4.75	
Benton	94	56	78.5	1.48	
Bluff City				4.95	
Bolivar	92	61	78.6	5.70	
Bristol	93	52	75.2	6.28	
Brownsville	96	61	80.6	7.10	
Byrdstown	91	56	76.8	4.96	
Carthage	98			7.66	
Clarksville	91	62	78.2	6.58	
Clinton				5.84	
Covington	98	64	81.9	0.98	
Decatur	95	56	78.5	3.27	
Dickson	94	58	78.5	2.70	
Dyersburg	96	61	81.2	4.04	
Elizabethton	98	57	77.3	3.94	
Elk Valley	92	54	75.2	8.48	
Erasmus	90			4.82	
Florence	90	60	77.6	4.69	
Franklin	91	60	77.8	4.05	
Grace *1	100	62	81.1	5.90	
Greeneville	94	52	75.9	4.48	
Harriman	94	55	77.5	4.82	
Hohenwald	94	56	76.4	5.82	
Iron City	94	59	78.2	4.24	
Johnsonville	94	55	78.3	7.59	
Jonesboro *1	90	65	75.9	3.04	
Kingston				4.11	
Lafayette *5	95	64	78.3	4.40	
Lewisburg	93[j]	66[j]	79.0[j]	4.72	
Liberty	95	58	79.4	6.80	
Lynnville	91	60	78.7	5.47	
McKenzie	94	62	80.5	2.65	
McMinnville	95	56	76.9	5.95	
Madison	98	54	79.8	5.18	
Maryville *5	99	56	79.8	4.10	
Milan	95	61	81.5	2.44	
Newport	94	57	78.0	4.26	
Nunnelly	90	56	77.2	2.75	
Tennessee—Cont'd.	°	°	°	*Ins.*	*Ins.*
Oakhill	94	55	77.4	5.34	
Palmetto	91	60	78.8	6.80	
Peryear *5	95	58	82.0	4.05	
Pope	95	52	78.0	5.87	
Rogersville	91	54	75.4	5.88	
Rugby	89	51	75.2	4.08	
Savannah	95	60	80.0	3.60	
Sewanee	87	58	74.8	4.70	
Silverlake	87	49	70.6	7.17	
Springfield	98	56	78.6	1.25	
Tazewell				4.22	
Tellico Plains	96	54	78.4	8.65	
Tracy City	96	52	75.0	2.56	
Trenton	94	58	79.9	1.98	
Tullahoma	89	59	76.3	2.00	
Union City	92	61	78.3	2.05	
Wildersville	89	62	78.1	2.34	
Yukon	95	60	77.8	8.97	
Texas.					
Alice	98	70	83.4	1.00	
Alpine	98	55	75.1	2.15	
Alvin				17.33	
Anna	99	60	79.4	7.75	
Anson				1.75	
Arthur				6.51	
Austin *a*	100	67	81.0	5.40	
Austin *b* *5	96	67	81.4		
Ballinger	98	66	80.8	3.99	
Beaumont	101	70	81.9	6.99	
Beeville	99	67	81.7	3.85	
Bigspring				0.99	
Blanco	97	62	80.2	4.68	
Boerne *1	94	69	79.6	8.40	
Bowie	97	61	80.1	5.65	
Brazoria	91	71	81.1	16.67	
Brenham	98	70	81.4	6.68	
Brighton	94	72	83.5	4.64	
Brownwood	105	64	84.2	4.81	
Burnet *1	98	67	79.3	2.60	
Camp Eagle Pass	101	68	84.7	1.70	
Coleman	98	65	79.8	5.94	
Colorado	103			1.50	
Columbia	92	70	80.5	8.68	
Corsicana	101	68	83.5	2.49	
Cuero	99	70	83.8	6.50	
Dallas	98	66	81.5	6.48	
Dublin	96	64	79.8	5.72	
Duval	94	70	80.9	6.13	
Emory	98	61	81.0	4.49	
Estelle	99	65	81.8	8.35	
Forestburg				9.99	
Fort Brown	99	65	84.6		
Fort Clark	100	68	84.0	1.80	
Fort McIntosh	102	67	86.3	1.15	
Fort Ringgold	101	73	85.4	3.30	
Fort Stockton				1.76	
Fredericksburg *1	94[c]	70[c]	79.2[d]	6.59	
Gainesville	98	68	81.1	9.02	
Grapevine	99	65	81.0	5.96	
Greenville	98	64	81.6	3.14	
Hale Center	94	64	75.8	4.74	
Hallettsville	97	72	83.0	4.70	
Haskell				1.47	
Hearne	102	71	87.2	2.97	
Henrietta	102	64	82.0	2.81	
Hewitt				3.10	
Hondo				2.30	
Houston	94	70	81.4	14.80	
Huntsville	98	67	81.8	7.19	
Ira	97	62	80.0	4.17	
Jacksonville	91	66	80.2	3.35	
Jasper	95	70	80.0	12.01	
Kaufman	96	60	82.4		
Kent				2.61	
Kerrville	98	63	80.8	15.59	
Lampasas	100	65	79.9	2.05	
Langtry	98	66	80.8	4.10	
Lapara				5.78	
Laureles Ranch				3.58	
Llano *5	96	70	83.2	2.60	
Longview	100	69	83.6	3.13	
Luling	98	69	82.6	5.10	
Mann	95	67	81.2	3.31	
Menardville				4.60	
Mount Blanco	96	60	77.3	7.59	
Nacogdoches	103	68	84.2	3.72	
New Braunfels	96	70	82.7	3.58	
Panter				2.26	
Paris *a*	99	66	82.0	2.29	
Point Isabel *1	92	78	84.9	1.20	
Rhineland	102	65	82.9	5.26	
Rockisland	95	70	81.1	6.41	
Rockport *1	89	72	80.7		
Runge	99	70	83.8	4.99	
Sabine	96	70	84.0	15.62	
Saginaw *1	102	68	80.9	6.99	
Texas—Cont'd	°	°	°	*Ins.*	*Ins.*
Sanderson	94	65	81.6	2.05	
San Marcos	98	68	82.6	8.79	
Santa Gertrudes Ranch				0.93	
Sherman	97	68	82.2	7.20	
Sugarland	93	67	80.8	18.80	
Sulphur Springs	94	67	80.4	4.97	
Temple *a*	95	70	81.4	2.36	
Temple *b*	99	62	79.0	2.55	
Trinity	95	69	81.2	7.65	
Turnersville	98	67	80.4	6.51	
Tyler	99	71[c]	83.9	8.75	
Valentine	100	64	81.0	7.20	
Victoria				8.94	
Waco	98	70	84.5	2.85	
Waxahachie	99	65	82.2	3.10	
Weatherford	98	67	82.0	7.84	
Wichita Falls				5.89	
Utah.					
Alpine				0.08	
Bluecreek				T.	
Castledale	96	48	73.1	0.00	
Cisco				0.00	
Corinne	106	45	73.9	0.15	
Deseret	104	36	71.4	T.	
Elgin	106	49	78.5	0.00	
Farmington				T.	
Fillmore	110	39	76.2	T.	
Fishsprings	103	52	77.6	0.70	
Fort Duchesne	101	41	72.2	0.08	
Frisco	100	50	77.2	T.	
Giles	111	48	79.3	T.	
Grover	94	40	70.4	0.04	
Heber	100	34	65.0	0.25	
Henefer	96	30	62.8	0.05	
Hite	111	65	87.6	0.06	
Holyoke	104	52	81.6	0.00	
Huntsville				0.04	
Kelton *1	100	53	76.5	T.	
Levan	100	40	72.4	0.03	
Loa	93	33	66.2	0.95	
Logan	98	47	70.9	0.51	
Manti	108	44	73.2	0.00	
Marysvale *1	90	40	58.2	0.01	
Meadowville				0.09	
Millville				0.00	
Minersville	101	48	75.4	0.04	
Moab	104	51	78.2	0.02	
Mount Pleasant	102	39	71.6	T.	
Ogden *1	100	58	76.2	0.15	
Park City	90	38	64.2	0.10	
Parowan	101	38	71.4	0.11	
Pinto	97	32	67.7	0.13	
Promontory				0.00	
Richfield	102	50	73.8	0.00	
St. George	111	48	79.9	0.16	
Scipio	101	33	70.2	T.	
Snowville	97	37	68.6	0.00	
Soldier Summit				0.25	
Thistle	106	37	71.4	0.10	
Tooele	98	49	73.0	0.32	
Tropic	99	38	69.4	0.15	
Vernal	100	43	72.8	0.08	
Wellington	99	38	69.3	0.00	
Woodruff	92	34	62.3	T.	
Vermont.					
Bennington	94	45	70.6	4.62	
Burlington	90	53	72.6	2.73	
Cornwall	96	50	72.2	2.78	
Derby	87	47	66.8	6.69	
Enosburg Falls	90	44	67.6	5.02	
Hartland	93	40	67.0	2.41	
Jacksonville	93	40	66.6	2.72	
Manchester	93	46	69.8	4.18	
Norwich	93	41	67.9	3.87	
St. Johnsbury	90	43	66.5	4.21	
Vernon *6	95	57	73.8	4.10	
Wells	94	48	70.0	3.84	
Woodstock	92	42	67.4	2.59	
Virginia.					
Alexandria	103	57	80.8	2.86	
Ashland	101	57	80.9	1.62	
Barboursville	98	55	78.4	1.60	
Bedford	101	55	77.0	3.65	
Bigstone Gap	94	52	75.2	6.06	
Birdsnest *1	93	63	77.2	4.75	
Blacksburg	92	44	71.4	5.45	
Bon Air	99	58	80.2	2.49	
Buckingham	104	51	79.2	3.21	
Burkes Garden	89	41	67.9	1.91	
Callaville	104	54	79.3	2.60	
Christiansburg				1.37	
Clarksville				2.56	
Cliftonforge	99	51	74.6	2.25	
Columbia				2.50	
Dale Enterprise	100	47	74.8	3.47	
Danville				3.25	

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Virginia—Cont'd.	°	°	°	*Ins.*	*Ins.*
Doswell	104	50	80.4	2.01	
Farmville	105	55	80.6	3.58	
Fontella	102	56	80.4	2.21	
Fredericksburg	99	54	78.9	2.81	
Freeling	95	45	72.4	2.92	
Hampton	94	64	80.4	6.05	
Hot Springs	91	46	70.6	5.25	
Lexington	96	51	75.2	3.12	
Manassas	97[h]	56	78.8[f]	4.70	
Marion	95	45	74.2	4.27	
Meadowdale	92	44	70.5	4.59	
Newport News	98	65	83.5	4.65	
Petersburg	101	56	81.4	4.14	
Radford	.....	.....	.....	1.17	
Rockymount	96	55	78.6	0.60	
Salem	98	56	77.4	2.41	
Speers Ferry	.....	.....	.....	6.46	
Spottsville	101	55	79.4	3.50	
Stanardsville	100	54	76.6	2.03	
Staunton	99	49	77.1	2.57	
Stephens City	103	50	77.6	5.24	
Sunbeam	100	56	79.6	6.51	
Warrenton	99	56	77.0	4.72	
Warsaw	100	58	80.8	2.90	
Westpoint	99	44	77.2	4.61	
Woodstock	102	48	77.0	4.41	
Wytheville	95	49	74.4	3.03	
Washington.					
Aberdeen	82	42	59.8	1.26	
Anacortes	.....	.....	.....	0.61	
Ashford	.....	.....	.....	1.50	
Bremerton	85	46	64.5	1.63	
Brinnon	82	48	63.5	1.68	
Cedonia	94	42	65.9	0.59	
Centerville	98	41	66.2	0.03	
Chehalis	92	42	64.6	1.02	
Cheney	.....	.....	.....	0.12	
Clearwater	82	45	61.2	2.90	
Cle Elum	99	35	64.4	0.04	
Colfax	105	38	68.4	0.13	
Colville	101	37	65.4	0.49	
Conconully	95	41	67.1	0.53	
Connell	.....	.....	.....	0.08	
Coulee City	103	46	72.8	0.30	
Coupeville	83	45	60.9	0.78	
Crescent	103	40	68.4	0.65	
Dayton	97	41	68.2	0.99	
Ellensburg	96	38	67.1	0.10	
Ellensburg (near)	104	42	71.5	T.	
Grandmound	90	46	65.2	0.87	
Granite Falls	.....	.....	.....	1.19	
Hooper	107	45	72.2	0.54	
Issaquah	.....	.....	.....	0.70	
Lacenter	98	47	65.6	0.90	
Lakeside	99	49	78.6	T.	
Lind	116	36	78.3	0.06	
Mayfield	90	40	63.0	1.17	
Montecristo	85	43	61.8	2.84	
Mottinger Ranch	106	51	75.0	0.00	
Mount Pleasant	92	46	66.2	1.00	
Moxee Valley	102	40	71.0	0.14	
New Whatcom	78	45	60.3	1.60	
Northport	100	36	65.7	1.32	
Olga	79	42	59.2	0.64	
Olympia	90	44	64.0	0.28	
Pinehill	98	45	70.8	T.	
Port Townsend	81	47	60.8	0.66	
Pullman	101	41	66.4	0.92	
Republic	100	36	65.6	0.96	
Ritzville	.....	.....	.....	0.10	
Rosalia	98	38	65.2	0.26	
Sedro	85	40	61.4	1.08	
Shoalwater Bay *[10]	70	50	58.1	.....	
Silvana	83	41	61.0	0.67	
Snohomish	82	45	61.6	0.93	
Southbend	91	43	63.4	1.25	
Sprague	.....	.....	.....	T.	
Sunnyside	101	43	72.0	0.10	
Twin	76	44	56.4	0.94	
Union	85	42	63.2	0.53	
Usk	96	40	65.4	0.38	
Vancouver	91	44	65.0	0.82	
Vashon	82	49	62.7	0.50	
Waterville	102	39	68.0	0.00	
Wenatchee (near)	97[i]	40[i]	67.1[i]	0.00	
Westsound	84	41	61.9	0.62	
Wilbur	101	34	65.1	0.07	
West Virginia.					
Beckley	94	44	73.0	1.72	
Beverly	93	45	72.0	5.33	
Bluefield	91	48	72.4	3.28	
Buckhannon *b*	95	45	73.4	4.09	
Burlington	98	45	74.6	4.16	
Central	96	45	74.8	5.30	
Chapel	96	52	79.6	.....	
Charleston	.....	.....	.....	3.90	
West Virginia—Cont'd.					
Dayton	95	45	71.8	4.61	
Eastbank	94	57	77.0	2.78	
Elkhorn	93	51	73.7	5.58	
Fairmont	.....	.....	.....	5.08	
Glenville	96	50	75.0	4.36	
Grafton	95	44	73.5	5.09	
Green Sulphur Springs	98	49	75.6	3.17	
Hamlin	96	53	75.8	.....	
Harpers Ferry	.....	.....	.....	4.61	
Hinton *a*	.....	.....	.....	3.35	
Huntington	98	54	77.6	4.87	
Lewisburg	98	45	72.7	4.00	
Marlinton	90	42	69.8	5.69	
Martinsburg	104	52	77.2	3.52	
Morgantown	97	46	75.4	6.93	
New Martinsville	96	48	75.8	3.84	
Nuttallburg	93	47	72.4	3.92	
Oceana	94	52	76.0	5.34	
Oldfields	100	46	76.0	3.05	
Parsons	93	48	69.6	3.70	
Philippi *a*	94	41	71.4	4.28	
Philippi *b*	.....	.....	.....	5.30	
Point Pleasant	99	52	78.0	3.54	
Princeton	89	50	72.0	7.88	
Romney	101	43	76.4	3.79	
Rowlesburg	.....	.....	.....	2.70	
Southside	97	55	77.6	3.48	
Spencer	96	49	76.2	5.11	
Terra Alta	90	50	73.3	5.55	
Uppertract	98	43	74.0	2.68	
Wellsburg	90	52	72.4	6.13	
Weston *a*	.....	.....	.....	4.11	
Weston *b*	76	49	75.8	.....	
Wheeling *a*	.....	.....	.....	3.85	
Wheeling *b*	98	52	80.9	4.26	
Wiggins	96	54	75.0	.....	
Wisconsin.					
Amherst	91	44	67.4	5.68	
Antigo	90[e]	42[e]	66.6[e]	.....	
Ashland	.....	.....	.....	5.71	
Barron	94	42	69.8	7.70	
Bayfield	93	49	66.3	4.20	
Beloit	.....	.....	.....	6.14	
Brodhead	92	46	70.4	7.14	
Butternut	85	38	63.1	6.55	
Casco	92	45	66.6	5.20	
Citypoint	91	45	69.2	8.77	
Delavan	96[d]	46[d]	72.0[d]	.....	
Dodgeville	93	45	69.4	8.02	
Easton	94	44	69.8	6.71	
Eau Claire	91	45	70.2	8.88	
Florence	88	40	64.6	5.23	
Fond du Lac	95	47	69.4	5.63	
Grand River Locks	.....	.....	.....	6.54	
Grantsburg	95	44	68.0	8.77	
Hartford	94	44	70.2	6.63	
Hartland	91	47	70.2	6.84	
Harvey	91	51	71.5	6.67	
Hayward	93	40	67.0	8.95	
Heafford	86	41	65.2	9.00	
Hillsboro	92	.....	.....	7.41	
Knapp	90	45	67.9	10.55	
Koepenick *[1]	88	52	65.8	7.80	
Lancaster	92	49	70.0	9.42	
Madison	88	51	70.2	6.91	
Manitowoc	94	47	64.6	4.59	
Meadow Valley	93	42	68.6	8.16	
Medford	100	38	67.0	8.78	
Menasha	.....	.....	.....	5.58	
Neillsville	91	44	67.8	9.04	
New London	96	46	69.2	5.83	
Oconto	92	48[c]	68.2	8.00	
Osceola	94	43	67.6	9.76	
Pepin	92	44	71.2	5.12	
Pine River	93	45	67.8	4.66	
Portage	92	50	69.8	8.28	
Port Washington	96	46	66.7	4.57	
Prairie du Chien *a*	96	51	72.8	5.89	
Prairie du Chien *b*	.....	.....	.....	5.73	
Prentice	85	42	64.8	13.35	
Racine	93	50	69.6	6.66	
Sharon	.....	.....	.....	5.61	
Shawano	91	48	68.2	6.59	
Sheboygan	95	50	67.6	5.53	
Spooner	92	40	68.7	9.29	
Stevens Point	92	44	68.0	8.28	
Sturgeon Bay Canal *[9]	80	50	62.3	.....	
Two Rivers *[10]	90	52	64.6	.....	
Valley Junction	92	41	68.1	6.84	
Viroqua	90	50	69.3	9.20	
Watertown	91	45	69.6	5.08	
Waukesha	90	51	69.7	7.03	
Wausau	87	41	66.2	13.02	
Wausaukee	90[j]	39[j]	66.6[j]	6.72	
Westfield	93	48	69.8	5.79	
Whitehall	93	43	69.4	9.92	
Wyoming.					
Alcova	106	42	71.5	1.85	
Basin	114	40	78.4	0.06	
Bedford	95	28	59.7	0.45	
Buffalo	104	42	69.4	2.16	
Burlington	108	40	70.5	0.19	
Carbon [j]	100	35	66.6	0.27	
Centennial	83	31	56.4	0.97	
Cody	104	36	69.4	0.50	
Daniel	89	20	53.2	1.20	
Dome Lake	77	29	50.6	0.88	T.
Evanston	92	34	60.3	0.37	
Fort Laramie	102	43	70.6	3.69	
Fort Washakie	95	36	64.8	1.80	
Fort Yellowstone	93	32	61.2	0.80	
Fourbear	88	32	58.3	0.72	
Hyattville	99	34	67.8	0.06	
Iron Mountain	94	36	65.2	1.14	
Laramie	89	34	62.8	1.25	
Lovell	108	35	68.3	0.08	
Lusk	98	40	67.6	2.74	
Parkman	103	36	67.2	0.78	
Pinebluff	99	.....	.....	1.76	
Rawlins	94	37	64.9	1.97	
Saratoga	94	37	66.1	1.60	
Sheridan	102	39	66.0	0.38	
South Pass City	90	34	61.4	0.62	
Thayne	96	27	60.0	0.88	
Thermopolis	106	42	70.4	0.35	
Wheatland	101	48	73.2	2.12	
Cuba.					
Aguacate	95	66	80.6	8.89	
Australia	95	68	82.2	3.31	
Batabano	95	69	82.3	6.89	
Camajuani	94	68	78.8	4.40	
Cruces	.....	.....	.....	5.01	
Gibara	94	67	81.4	1.20	
Guabairo	.....	.....	.....	9.06	
Guanajay	.....	64	.....	12.53	
Guantanamo	98	67	81.4	2.58	
Guines	96	74	86.8	11.17	
Holguin	95	66	80.0	1.25	
Limonar	.....	.....	.....	16.64	
Los Canos	97	66	81.3	3.60	
Magdalena	.....	.....	.....	8.47	
Manzanillo	96	74	84.8	5.65	
Moron Trocha	94	68	81.6	2.98	
Nuevitas	94	72	82.6	3.65	
Pinar del Rio	93	69	81.2	5.45	
Sagua la Grande	93	65	80.6	5.15	
Santa Clara	95	64	80.4	3.41	
Santa Cruz del Sur	93	68	79.9	3.99	
Soledad	91	68	80.0	8.93	
Union de Reyes	91	74	82.0	9.35	
Porto Rico.					
Adjuntas	92[a]	58[b]	75.8[c]	11.06	
Aguadilla	88	74	81.5	6.94	
Arecibo	88	69	78.2	4.84	
Bayamon	96	67	80.1	5.16	
Caguas	89	65	77.6	8.15	
Canovanas	91	73	80.8	9.49	
Cidra	89	66	76.6	13.23	
Coamo	95	65	81.6	6.00	
Corozal	93	63	79.2	8.20	
Fajardo	89	70	80.8	5.43	
Hacienda Coloso	95	67	79.2	11.53	
Hacienda Perla	90	72	79.6	12.23	
Humacao	95	73	82.5	13.67	
Isabela	91	68	80.0	5.01	
Juana Diaz	96	68	82.7	4.25	
La Isolina	90	65	76.8	7.23	
Lajas	95	66	80.8	5.50	
Manati	92	67	80.2	7.67	
Maunabo	90	75	82.0	11.53	
Mayaguez	92	70	80.3	13.11	
Morovis	89	66	78.0	1.19	
Ponce	93	69	80.5	6.88	
Port America	91	67	80.3	7.91	
Puerta de Tierra	89	72	81.2	7.14	
San German	94	60	78.2	5.84	
San Lorenzo	92	66	79.0	14.18	
Utuado	.....	.....	.....	2.47	
Vieques	89	70	81.0	4.40	
Waikato	94	65	79.7	6.57	
Yanco	96	64	80.7	5.61	
Mexico.					
Ciudad P. Diaz	99	74	87.0	1.22	
Coatzacoalcos	91	68	78.8	19.43	
Guanajuato	88	54	69.2	7.81	
Leon de Aldamas	87	55	71.2	6.43	
Progreso	100	71	81.6	44.64	
Puebla *[1]	79	54	65.3	7.92	
Tampico	93	71	82.1	9.73	
Topolobampo *[1]	98	80	86.2	0.56	
Vera Cruz	90	71	80.0	18.19	
New Brunswick.					
St. John	78	48	62.6	1.34	

TABLE II.—*Climatological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
	°	°	°	*Ins.*	*Ins.*
Nicaragua.					
Rivas	89	74	80.7	10.69	

Late reports for June, 1900.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
	°	°	°	*Ins.*	*Ins.*
Alaska.					
Coal Harbor	69	36	49.5	1.88	
Fort Yukon	98	27	58.6	1.19	
Holy Cross Mission	74	29	52.4	1.67	0.4
St. Michaels	64	31	44.2	......	
Tyoonok	82	40	53.8	0.72	
Wood Island	71	39	51.6	3.35	
Arizona.					
San Simon	......	......	......	0.00	
Winslow	101	45	72.0	0.08	
California.					
Bellevue	......	......	......	1.76	
Craftonville	108	50	78.0	0.00	
Kernville	......	......	......	0.00	
Mills College	......	......	......	T.	
Niles *[1]	100	56	68.8	0.08	
Santa Barbara	81	51	63.8	0.01	
Santa Maria	81	52	65.0	T.	
Summerdale	83	37	61.8	0.07	
Florida.					
Federal Point	98	62	78.3	9.70	
Georgia.					
Blakely	......	......	......	7.58	
Manzy	98	59	79.0	8.85	
Idaho.					
Priest River	......	....	......	1.34	
Illinois.					
Lagrange [4]	90	43	63.2	3.40	
St. Charles *[1]	94	50	67.5	4.58	
Iowa.					
Storm Lake	92	44	67.1	6.79	
Kansas.					
Osage City	104	48	74.4	4.33	
Yates Center	102	53	74.8	3.81	
Maine.					
Bemis	95	40	66.0	4.42	
Nebraska.					
Auburn	97	46	72.4	8.23	
New Mexico.					
Deming	......	....	......	T.	
New York.					
South Kortright	90	38	64.6	4.74	
Ohio.					
Ashland	89	44	69.0	4.02	
Greenspring	89	53	71.4	3.62	
Logan	.....	......	.....	1.90	
Rhode Island.					
Pawtucket	89	40	63.2	2.56	
South Dakota.					
Gary	95	42	69.8	0.60	
Texas.					
Kerrville	97	57	77.6	1.44	
San Antonio	102	68	84.4	0.85	
Utah.					
Millville	.....	......	......	0.00	
Virginia.					
Doswell	101	54	75.4	2.28	
Washington.					
Ellensburg	91	36	63.1	0.05	
Cuba.					
Cardenas	95	69	82.8	4.96	
Mexico.					
Guanajuato	94	55	73.8	2.03	

EXPLANATION OF SIGNS.

* Extremes of temperature from observed readings of dry thermometer.

A numeral following the name of a station indicates the hours of observation from which the mean temperature was obtained, thus:

[1] Mean of 7 a. m. + 2 p. m. + 9 p. m. + 9 p. m. ÷ 4.
[2] Mean of 8 a. m. + 8 p. m. ÷ 2.
[3] Mean of 7 a. m. + 7 p. m. ÷ 2.
[4] Mean of 6 a. m. + 6 p. m. ÷ 2.
[5] Mean of 7 a. m. + 2 p. m. ÷ 2.
[6] Mean of readings at various hours reduced to true daily mean by special tables.
[7] Mean from hourly readings of thermograph.
[9] Mean of sunrise and noon.
[10] Mean of sunrise, noon, sunset, and midnight.

The absence of a numeral indicates that the mean temperature has been obtained from daily readings of the maximum and minimum thermometers.

An italic letter following the name of a station, as "Livingston *a*," "Livingston *b*," indicates that two or more observers, as the case may be, are reporting from the same station. A small roman letter following the name of a station, or in figure columns, indicates the number of days missing from the record; for instance "n" denotes 14 days missing.

No note is made of breaks in the continuity of temperature records when the same do not exceed two days. All known breaks, of whatever duration, in the precipitation record receive appropriate notice.

CORRECTIONS.

NOTE.—The following change has been made in the names of stations: Mississippi, Americus, changed to Latonia.

TABLE III.—*Mean temperature for each hour of seventy-fifth meridian time, July, 1900.*

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Mean.
Bismarck, N Dak....	64.6	63.3	62.6	60.9	60.0	58.7	58.5	61.1	65.5	69.0	72.5	75.4	77.4	79.2	80.7	81.4	81.7	81.5	80.7	79.5	76.3	72.1	69.5	67.1	70.8
Boston, Mass	68.5	67.6	67.1	66.6	66.4	67.5	69.8	72.6	74.7	76.6	78.1	79.2	80.1	80.5	79.7	79.9	79.5	78.6	76.5	74.7	73.1	71.9	70.8	69.9	73.8
Buffalo, N. Y.........	68.0	67.4	67.0	66.6	66.2	66.5	67.4	68.5	70.2	71.2	71.9	72.7	73.5	74.3	74.6	74.5	74.3	73.7	72.7	71.9	70.8	70.0	69.5	68.8	70.5
Cedar City, Utah....	71.4	70.3	69.4	68.3	67.3	66.2	65.4	65.0	66.4	70.4	75.2	78.6	80.5	81.9	82.4	83.6	84.3	84.2	84.2	83.3	81.4	76.8	74.5	72.7	75.2
Chicago, Ill..........	69.0	68.6	68.2	66.9	66.9	66.4	67.1	69.2	70.7	71.7	72.6	73.5	74.4	74.5	74.7	75.3	75.3	75.1	74.5	72.6	71.8	70.6	70.1	69.6	71.2
Cincinnati, Ohio....	72.3	71.4	70.6	69.9	69.2	68.7	69.6	72.1	74.7	77.2	79.8	81.4	82.4	82.9	83.2	83.1	83.5	83.0	81.4	80.5	78.4	76.9	75.3	73.9	76.7
Cleveland, Ohio	68.5	68.0	67.7	67.5	66.7	66.5	68.0	69.9	72.2	73.9	75.2	75.9	75.5	75.0	75.9	75.9	76.0	75.4	75.8	74.6	73.3	71.9	70.6	69.5	72.1
Detroit, Mich........	68.4	67.5	66.7	66.2	65.5	64.5	65.5	68.3	70.4	72.7	74.3	76.3	76.4	77.8	77.9	77.4	77.4	76.7	75.8	74.2	72.3	70.9	70.0	69.0	71.8
Dodge, Kans.........	72.2	71.3	69.5	68.5	67.3	66.5	65.8	68.3	72.1	75.3	78.5	81.4	83.7	85.3	87.1	87.8	88.4	87.3	85.4	83.8	80.2	76.5	74.5	73.5	77.1
Eastport, Me.........	56.3	55.6	54.8	54.4	54.8	55.5	57.1	59.0	60.9	62.2	63.5	64.4	65.1	65.5	65.5	65.2	64.6	63.9	61.5	60.1	58.8	58.1	57.1	56.9	60.0
Galveston, Tex.......	81.2	80.7	80.6	80.3	80.3	80.2	80.1	81.1	81.6	82.4	83.3	83.4	84.2	84.3	84.4	84.2	84.0	83.7	83.2	82.4	81.5	81.4	81.1	81.2	82.1
Havre, Mont.........	65.1	63.1	61.5	59.4	57.8	56.7	56.0	56.9	61.6	65.6	69.9	73.0	75.8	77.6	79.5	80.2	80.2	81.2	80.8	80.3	77.8	74.8	70.1	67.9	69.7
Independence, Cal..	79.8	77.6	75.9	74.7	73.6	71.7	70.4	70.1	69.2	71.0	75.5	79.5	83.5	86.2	88.7	89.9	90.6	90.9	90.8	91.0	88.8	85.5	82.8	81.6	80.8
Kalispell, Mont	59.0	56.9	54.7	52.7	51.3	50.2	49.5	50.3	53.2	57.4	61.8	65.9	68.8	71.2	73.0	74.3	75.7	75.5	75.9	75.8	75.0	72.3	67.5	62.6	63.8
Kansas City, Mo.....	74.2	73.2	72.4	71.5	70.9	70.5	70.1	71.5	73.5	75.5	77.8	79.5	81.2	82.3	83.1	83.9	84.7	84.0	83.5	82.2	80.2	78.0	76.6	75.3	77.3
Key West, Fla.......	80.5	80.2	80.1	79.9	79.9	79.4	81.5	82.6	84.0	84.6	85.5	85.5	85.0	85.0	85.0	84.3	83.9	83.3	82.0	81.6	81.2	80.9	80.8	80.5	82.4
Marquette, Mich	61.1	60.7	60.3	60.3	60.1	59.8	60.1	61.4	63.0	64.1	65.3	66.5	67.5	67.9	68.3	67.9	68.1	67.6	66.6	65.5	64.2	63.0	62.2	61.7	63.9
Memphis, Tenn.......	75.8	75.0	74.3	73.6	72.8	72.7	73.5	75.4	77.9	79.6	81.6	83.4	84.9	85.6	86.3	86.7	85.7	85.7	83.7	82.8	80.1	78.8	77.8	76.9	79.6
Mt. Tamalpais, Cal..	69.1	68.5	67.9	67.3	67.4	67.1	66.5	65.7	65.5	66.5	66.7	67.0	68.7	70.3	72.0	72.7	75.0	74.0	74.1	73.4	73.0	71.4	69.9	69.6	69.6
New Orleans, La.....	77.2	77.2	77.1	77.0	77.0	77.0	77.9	79.4	81.5	82.7	84.0	84.6	83.7	83.6	81.9	82.3	82.2	82.0	81.2	80.5	79.6	78.9	78.0	77.5	80.2
New York, N. Y......	71.6	71.0	70.5	70.1	69.5	69.7	70.5	72.3	74.3	77.2	79.5	80.8	81.8	81.9	81.7	81.9	80.7	79.1	78.0	76.0	75.1	74.5	73.9	73.2	75.6
Philadelphia, Pa.....	73.2	72.5	71.9	71.4	70.9	70.9	72.7	75.5	77.5	79.8	81.9	83.6	85.3	86.3	86.4	86.8	85.2	84.0	81.4	78.5	77.5	76.3	75.3	74.5	78.3
Pittsburg, Pa.........	70.3	69.5	68.5	68.0	67.3	67.6	68.6	71.3	74.7	77.4	79.9	81.4	83.2	84.4	84.6	84.0	83.4	82.8	80.4	78.0	75.8	74.5	73.4	72.4	75.9
Portland, Oreg.......	66.0	64.6	63.2	61.8	60.1	58.9	57.6	57.0	57.2	58.6	60.9	62.5	64.8	67.2	69.8	71.8	74.1	75.4	76.0	75.6	74.8	73.4	70.5	68.5	66.3
St. Louis, Mo.........	75.1	74.5	73.7	73.0	72.4	71.8	72.4	73.7	75.7	77.9	80.2	82.2	83.8	84.5	84.5	84.9	85.3	84.8	83.6	82.2	80.3	78.2	77.0	76.0	78.7
St. Paul, Minn.......	67.7	66.7	66.1	65.3	64.6	63.8	64.5	64.6	66.8	69.3	71.8	73.6	75.7	77.2	77.9	78.6	79.4	79.2	78.3	77.4	75.4	73.3	71.3	69.5	71.5
Salt Lake City, Utah.	72.0	69.8	68.8	66.7	66.8	65.9	64.4	64.3	65.9	70.3	74.6	78.4	80.9	82.8	84.7	85.8	85.9	85.1	85.5	85.0	84.3	79.2	75.8	74.4	75.7
San Diego, Cal.......	65.5	65.2	65.0	64.8	64.7	64.5	64.2	64.1	64.4	65.3	66.5	68.0	69.5	69.9	70.7	70.9	70.6	70.3	69.7	69.0	68.3	67.1	66.4	66.2	67.1
San Francisco, Cal...	53.8	53.6	53.5	53.1	52.8	52.6	52.6	53.5	52.4	54.7	57.1	59.0	60.8	61.9	62.3	62.8	62.4	61.4	60.7	59.8	58.2	56.5	55.4	54.6	56.9
Santa Fe, N. Mex ...	65.9	65.3	63.7	62.8	61.0	60.0	58.7	60.3	65.5	67.9	70.0	71.7	74.2	76.4	77.1	77.2	78.7	78.8	77.4	74.9	72.7	70.2	68.5	67.3	69.4
Savannah, Ga.........	76.4	75.9	75.5	75.0	74.7	74.4	75.9	78.4	81.4	83.6	85.8	87.7	87.7	88.0	87.6	86.1	84.0	82.8	80.9	79.4	78.2	77.7	77.3	77.0	80.5
Washington, D. C....	72.7	71.9	71.1	70.5	69.6	69.6	72.2	75.5	78.5	80.8	83.1	84.6	85.9	86.9	87.0	87.0	86.3	85.2	82.6	79.5	77.1	75.9	74.6	73.8	78.4
West Indies.																									
Basseterre, St. Kitts.	78.5	78.8	78.4	78.4	78.6	79.7	81.1	82.2	83.4	83.6	83.7	84.1	84.4	83.8	83.3	82.5	81.0	80.2	80.0	80.3	80.0	79.7	79.3	78.9	81.0
Bridgetown, Bar.....	77.4	77.1	76.9	76.8	76.9	78.7	81.3	82.4	83.4	83.9	84.6	84.3	84.5	84.4	82.9	82.3	80.6	79.2	78.5	78.2	77.8	77.8	77.9	77.5	80.2
Cienfuegos, Cuba ...	74.4	73.8	73.4	73.3	73.2	73.2	75.7	79.2	82.4	84.6	86.6	87.6	87.7	86.0	85.2	83.8	81.9	80.5	79.3	78.4	77.3	76.7	75.9	75.3	79.4
Havana, Cuba........	76.3	75.6	75.2	74.8	74.4	74.2	75.6	78.9	81.3	83.6	84.8	85.1	84.5	84.2	83.3	82.2	81.2	80.4	79.9	79.0	78.3	77.9	77.2	76.8	79.4
Kingston, Jamaica..	74.8	74.4	74.5	73.8	73.5	73.8	75.5	79.1	81.9	84.0	85.7	86.4	86.3	85.9	85.0	84.3	83.2	81.8	80.2	78.4	77.2	76.1	75.6	75.2	79.5
Port of Spain, Trin..	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
P. Principe, Cuba ...	73.6	72.8	72.5	72.0	71.8	71.7	72.7	77.6	79.5	82.1	84.4	86.6	87.9	88.5	88.0	85.4	84.1	81.5	79.2	77.0	75.9	75.2	74.7	74.3	78.7
Roseau, Dominica ..	77.0	76.4	76.6	76.6	76.6	77.0	79.3	81.8	83.9	84.4	85.2	85.5	85.6	85.8	85.0	83.9	82.7	81.0	79.5	78.7	78.5	77.9	77.8	77.7	80.6
San Juan, P. R......	77.7	77.2	77.0	76.6	76.6	77.7	79.4	80.9	82.2	83.5	83.8	83.3	83.9	83.4	82.6	82.4	81.7	80.6	80.3	79.9	79.5	79.3	78.6	78.2	80.3
Santiago de Cuba....	75.7	75.3	74.6	74.4	74.2	74.5	77.7	81.0	85.2	87.7	89.7	90.3	89.6	88.6	86.6	85.9	84.4	83.0	81.1	80.1	79.0	78.2	77.4	76.7	81.3
Santo Domingo, S. D.	74.3	73.9	73.7	73.5	73.3	73.4	76.0	79.5	81.7	83.5	84.2	83.9	83.9	82.8	82.4	81.6	80.7	79.3	77.3	76.5	75.6	75.1	74.7	74.5	78.1
Willemstad, Curaçao	79.0	78.8	78.8	78.7	78.7	79.0	80.6	82.0	82.6	83.1	83.9	84.4	84.8	84.9	84.9	83.7	82.4	81.4	80.5	80.4	80.2	80.1	79.8	79.6	81.3

TABLE IV.—*Mean pressure for each hour of seventy-fifth meridian time, July, 1900.*

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Mean.
Bismarck, N. Dak....	28.145	.145	.149	.154	.162	.164	.176	.182	.186	.187	.184	.174	.163	.152	.137	.131	.123	.118	.115	.115	.120	.131	.144	.153	.150
Boston, Mass.........	29.792	.790	.793	.798	.809	.824	.826	.824	.815	.811	.805	.708	.787	.780	.769	.764	.763	.768	.777	.784	.795	.797	.790	.795	.794
Buffalo, N. Y.........	29.149	.143	.142	.144	.149	.153	.159	.165	.167	.169	.172	.167	.163	.153	.145	.135	.128	.126	.130	.130	.143	.143	.145	.148	.149
Cedar City, Utah....	24.245	.245	.245	.245	.244	.250	.255	.261	.275	.283	.286	.285	.281	.276	.269	.257	.245	.234	.223	.217	.221	.227	.240	.252	.252
Chicago, Ill..........	29.110	.108	.107	.104	.105	.110	.115	.123	.133	.135	.135	.131	.123	.115	.101	.093	.084	.077	.076	.079	.085	.094	.101	.110	.106
Cincinnati, Ohio	29.358	.357	.355	.358	.363	.371	.381	.388	.390	.385	.385	.379	.368	.357	.346	.341	.327	.319	.320	.323	.334	.347	.353	.358	.357
Cleveland, Ohio	29.175	.173	.173	.173	.181	.188	.191	.199	.201	.204	.203	.201	.189	.180	.173	.165	.160	.153	.155	.159	.170	.176	.175	.173	.179
Detroit, Mich.........	29.189	.188	.186	.188	.191	.198	.205	.213	.214	.212	.213	.207	.201	.190	.183	.172	.164	.157	.158	.165	.171	.181	.182	.188	.188
Dodge, Kans	27.366	.369	.368	.368	.370	.374	.379	.378	.386	.388	.387	.381	.372	.358	.342	.325	.312	.304	.308	.320	.334	.347	.362	.370	.358
Eastport, Me	29.800	.797	.798	.804	.813	.823	.826	.830	.827	.825	.821	.819	.811	.804	.797	.791	.790	.794	.800	.807	.817	.813	.813	.812	.809
Galveston, Tex.......	29.918	.913	.906	.905	.904	.907	.914	.918	.934	.940	.944	.946	.938	.930	.917	.908	.897	.890	.888	.891	.898	.907	.918	.922	.915
Havre, Mont..........	27.280	.285	.288	.291	.292	.296	.303	.308	.316	.317	.312	.305	.295	.285	.293	.263	.254	.241	.237	.245	.249	.249	.263	.275	.279
Independence, Cal ..	25.874	.879	.887	.892	.895	.901	.907	.913	.931	.945	.947	.947	.942	.933	.914	.900	.885	.872	.855	.842	.838	.843	.858	.878	.895
Kalispell, Mont	26.871	.876	.878	.880	.882	.886	.894	.899	.909	.914	.911	.905	.896	.885	.875	.861	.854	.848	.842	.837	.835	.841	.854	.868	.875
Kansas City, Mo.....	28.959	.957	.958	.955	.956	.964	.974	.983	.994	.998	.995	.995	.992	.980	.968	.954	.942	.933	.927	.928	.933	.950	.962	.967	.964
Key West, Fla.......	30.026	.019	.013	.007	.007	.010	.022	.031	.038	.040	.042	.038	.032	.024	.009	.997	.988	.985	.989	.005	.014	.025	.029	.030	.017
Marquette, Mich ...	29.131	.126	.121	.123	.130	.135	.143	.141	.146	.149	.148	.147	.139	.134	.125	.122	.118	.117	.119	.118	.128	.132	.135	.138	.131
Memphis, Tenn.......	29.596	.590	.587	.586	.591	.600	.612	.626	.634	.637	.637	.636	.626	.607	.595	.580	.571	.566	.569	.575	.580	.595	.601	.603	.600
Mt. Tamalpais, Cal .	27.458	.457	.452	.448	.442	.437	.440	.445	.457	.467	.480	.491	.499	.504	.504	.503	.498	.490	.480	.469	.456	.455	.456	.467	.469
New Orleans, La.....	29.967	.961	.957	.957	.962	.969	.978	.985	.994	.995	.995	.993	.988	.980	.971	.964	.951	.944	.947	.949	.959	.965	.970	.970	.470
New York, N. Y.....	29.642	.638	.640	.644	.652	.660	.666	.667	.664	.661	.656	.651	.640	.628	.617	.607	.605	.607	.616	.625	.637	.642	.643	.642	.640
Philadelphia, Pa.....	29.862	.862	.861	.866	.875	.880	.886	.891	.887	.884	.880	.874	.862	.851	.838	.830	.827	.829	.840	.846	.860	.865	.866	.866	.862
Pittsburg, Pa.........	29.118	.115	.114	.113	.116	.121	.129	.135	.135	.131	.129	.125	.115	.101	.091	.082	.078	.076	.082	.092	.103	.112	.114	.115	.111
Portland, Oreg......	29.828	.832	.838	.841	.843	.844	.847	.851	.859	.866	.872	.871	.866	.860	.850	.840	.830	.819	.809	.797	.796	.798	.805	.817	.837
St. Louis, Mo.........	29.382	.379	.376	.375	.380	.391	.402	.409	.416	.414	.414	.411	.400	.387	.377	.365	.356	.345	.347	.351	.361	.377	.382	.384	.388
St. Paul, Minn........	29.006	.006	.006	.002	.005	.009	.020	.028	.031	.035	.028	.024	.013	.007	.999	.992	.983	.976	.970	.969	.976	.987	.997	.007	.003
Salt Lake City, Utah.	25.538	.540	.543	.543	.546	.548	.559	.569	.581	.591	.596	.595	.591	.585	.574	.562	.551	.545	.535	.526	.521	.519	.529	.538	.555
San Diego, Cal.......	29.762	.763	.761	.758	.752	.751	.753	.759	.771	.780	.785	.782	.783	.781	.775	.768	.759	.750	.743	.738	.738	.741	.749	.761	.761
San Francisco, Cal...	29.737	.739	.737	.735	.731	.730	.732	.737	.748	.759	.771	.774	.775	.775	.772	.764	.754	.742	.733	.723	.723	.728	.733	.741	.745
Santa Fe, N. Mex ...	23.340	.343	.344	.342	.341	.344	.350	.356	.364	.369	.368	.366	.357	.345	.334	.322	.310	.300	.294	.299	.304	.314	.335	.345	.337
Savannah, Ga.........	29.996	.991	.987	.986	.990	.999	.011	.020	.024	.026	.025	.016	.004	.990	.977	.967	.960	.962	.971	.980	.988	.997	.999	.000	.994
Washington, D. C....	29.875	.872	.871	.873	.882	.893	.901	.907	.906	.906	.905	.898	.888	.875	.860	.848	.841	.841	.846	.854	.864	.871	.875	.877	.876
West Indies.																									
Basseterre, St. Kitts.	29.964	.956	.949	.949	.959	.968	.977	.984	.988	.990	.988	.979	.969	.955	.945	.939	.944	.954	.967	.978	.989	.993	.989	.978	.969
Bridgetown, Bar....	29.914	.909	.907	.909	.915	.926	.934	.938	.941	.941	.930	.919	.908	.898	.887	.887	.892	.901	.913	.926	.936	.939	.935	.924	.918
Cienfuegos, Cuba	29.932	.924	.913	.912	.916	.925	.937	.943	.945	.947	.945	.938	.924	.911	.835	.889	.891	.901	.916	.930	.942	.950	.950	.944	.926
Havana, Cuba........	29.955	.944	.938	.933	.936	.943	.955	.967	.967	.971	.969	.964	.954	.941	.928	.924	.918	.922	.931	.943	.953	.961	.966	.968	.948
Kingston, Jamaica..	29.667	.653	.642	.637	.636	.641	.657	.665	.666	.665	.661	.651	.634	.618	.608	.600	.598	.605	.623	.641	.656	.670	.676	.675	.643
Port of Spain, Trin..	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
P. Principe, Cuba ...	29.655	.643	.635	.634	.636	.644	.657	.664	.669	.669	.665	.660	.646	.635	.618	.614	.618	.628	.636	.648	.660	.670	.673	.666	.648
Roseau, Dominica ..	29.928	.921	.921	.924	.931	.940	.948	.954	.956	.956	.948	.935	.926	.912	.903	.902	.905	.916	.927	.942	.953	.955	.950	.937	.933
San Juan, P. R......	29.923	.914	.912	.913	.921	.934	.942	.947	.948	.948	.944	.985	.925	.910	.899	.898	.901	.911	.921	.931	.940	.946	.942	.933	.926
Santiago de Cuba....	29.883	.875	.866	.867	.871	.879	.887	.891	.897	.891	.884	.873	.858	.845	.839	.835	.837	.846	.860	.879	.892	.901	.902	.894	.873
Santo Domingo, S. D.	29.958	.946	.941	.938	.945	.960	.972	.978	.982	.978	.972	.962	.948	.935	.925	.919	.925	.934	.948	.961	.973	.983	.980	.971	.955
Willemstad, Curaçao	29.829	.819	.815	.816	.822	.834	.841	.846	.851	.848	.838	.824	.800	.777	.757	.751	.758	.769	.795	.815	.838	.849	.852	.843	.816

TABLE V.—*Average wind movement for each hour of seventy-fifth meridian time, July, 1900.*

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Abilene, Tex	8.6	8.6	8.5	8.2	8.1	7.8	7.2	8.0	9.8	11.4	12.1	11.8	11.3	11.0	10.6	11.2	11.9	11.7	11.6	11.8	10.5	9.2	8.6	8.6	9.9
Albany, N. Y	4.5	4.7	4.8	4.6	4.9	5.1	6.4	7.4	7.8	7.7	9.1	8.9	8.9	9.6	10.1	9.6	9.2	9.3	7.6	7.0	6.5	5.6	5.5	5.0	7.1
Alpena, Mich	6.8	7.5	7.2	7.2	6.8	7.1	7.3	8.5	9.4	10.5	11.3	11.8	12.0	12.9	12.8	12.7	12.7	12.3	10.9	9.1	8.8	7.5	7.1	7.6	9.5
Amarillo, Tex	8.8	9.3	9.4	9.5	9.5	9.6	8.2	8.3	9.7	11.2	11.5	11.4	13.3	12.0	12.1	12.1	11.7	11.5	11.3	12.1	8.7	8.2	8.9	9.5	10.3
Atlanta, Ga	6.8	6.7	6.3	6.4	6.3	6.1	5.8	5.4	5.5	6.7	7.3	7.4	7.8	8.3	8.5	8.7	8.5	8.5	7.6	7.6	6.9	7.3	7.5	7.1	7.1
Atlantic City, N. J	8.1	8.3	8.0	8.3	8.3	8.2	9.2	9.9	10.8	10.1	10.1	10.8	11.6	12.2	11.6	12.0	11.5	10.1	9.3	9.5	9.0	8.8	8.1	8.4	9.7
Augusta, Ga	4.0	3.7	3.3	3.0	3.1	2.8	2.9	3.6	4.5	5.2	5.5	5.9	6.8	7.5	8.0	8.2	8.3	8.0	7.0	5.8	5.0	4.4	4.0	4.2	5.2
Baker City, Oreg	3.1	2.9	4.0	5.1	4.8	5.4	6.0	6.4	6.1	4.2	3.4	4.3	5.2	5.6	6.0	7.3	8.3	8.6	9.0	9.5	9.2	8.0	5.1	4.4	5.9
Baltimore, Md	3.0	3.2	3.0	2.5	2.6	2.6	3.2	4.4	4.9	5.5	6.1	6.2	7.0	7.2	7.4	7.3	7.0	6.2	4.7	3.5	3.3	3.1	2.8	2.9	4.6
Bismarck, N. Dak	8.5	7.1	7.1	6.0	5.7	6.5	6.6	6.9	8.8	11.0	12.3	12.6	13.4	12.8	13.5	13.9	14.1	13.8	13.0	12.7	11.1	9.3	8.4	8.0	10.1
Block Island, R. I	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boise, Idaho	3.7	3.7	3.7	3.5	3.3	3.2	2.5	2.8	2.4	2.3	3.0	4.2	5.8	6.1	6.6	6.9	7.0	6.7	6.7	6.5	5.8	5.5	4.6	3.8	4.6
Boston, Mass	9.1	8.6	8.7	8.6	8.6	9.9	9.4	9.7	10.8	11.9	12.8	12.9	13.5	14.1	13.9	13.6	13.7	12.0	11.3	9.7	9.5	9.2	9.1	8.8	10.8
Buffalo, N. Y	12.5	12.4	11.9	11.5	11.9	11.7	11.3	11.7	12.7	13.5	14.5	14.9	15.8	16.8	16.4	16.1	15.2	15.0	13.6	12.8	11.9	11.6	12.5	12.9	13.4
Cairo, Ill	5.3	5.4	5.2	5.4	5.2	5.2	4.7	5.4	5.8	6.5	7.4	7.8	8.0	9.0	8.3	8.1	8.8	8.9	8.1	5.9	5.7	5.4	5.1	4.9	6.5
Cape Henry, Va	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carson City, Nev	5.3	5.2	5.1	3.9	3.6	3.3	3.6	3.0	2.7	2.1	2.5	3.8	4.0	5.7	7.5	8.7	10.9	11.9	13.1	12.9	11.6	10.0	8.6	6.2	6.5
Cedar City, Utah	7.3	7.9	8.0	8.2	8.6	8.3	8.0	8.3	7.9	5.7	3.9	4.5	5.9	6.9	7.9	8.8	8.4	8.3	7.9	7.3	6.4	5.6	4.0	5.6	7.1
Charleston, S. C	7.1	6.5	6.4	6.0	5.7	5.5	5.8	7.4	7.6	8.1	9.4	10.5	11.5	12.2	12.3	12.5	12.8	12.7	11.5	9.7	8.3	7.8	7.6	7.3	8.8
Charlotte, N. C	5.1	5.0	4.6	4.5	4.5	4.4	4.3	5.2	5.3	5.4	5.7	5.8	6.2	7.1	7.1	7.8	7.3	6.9	6.5	6.1	5.3	5.6	5.7	4.8	5.7
Chattanooga, Tenn	4.7	4.5	4.2	3.7	3.8	3.3	3.5	3.5	4.6	6.4	6.7	7.1	8.1	9.0	8.9	9.4	8.8	8.6	7.4	5.4	5.4	4.2	3.8	4.3	5.8
Cheyenne, Wyo	5.8	5.9	6.3	6.4	7.0	7.0	6.3	5.9	6.3	7.6	9.0	9.8	10.9	10.8	11.1	11.6	10.7	11.2	10.8	11.8	10.7	7.4	6.9	6.5	8.5
Chicago, Ill	13.8	13.5	13.8	13.8	14.3	14.3	14.3	13.7	13.9	14.6	13.8	15.1	16.3	17.1	18.5	18.2	18.6	18.3	17.1	16.1	15.7	15.9	15.3	14.2	15.4
Cincinnati, Ohio	3.6	3.7	3.5	3.9	3.7	3.7	3.7	4.7	5.9	7.2	8.4	8.9	9.6	9.0	9.1	9.3	8.9	9.3	7.7	6.8	5.8	4.7	4.8	4.0	6.3
Cleveland, Ohio	11.5	11.8	12.6	12.7	12.9	12.7	12.4	12.1	12.6	13.6	12.8	14.5	14.4	14.1	13.4	12.5	11.9	12.3	11.7	11.2	10.6	11.0	11.5	11.5	12.4
Columbia, Mo	6.0	5.3	5.1	5.2	5.0	5.5	5.3	5.7	7.0	8.1	8.3	8.8	8.8	9.0	9.2	8.8	8.2	7.5	6.9	5.8	5.5	5.0	5.1	5.5	6.7
Columbus, Ohio	4.6	4.4	4.2	4.1	4.2	4.7	5.1	5.9	6.5	7.5	8.2	8.7	9.2	9.6	9.3	9.5	9.1	8.8	8.0	6.4	5.1	5.3	4.8	4.8	6.6
Concordia, Kans	8.9	9.2	8.4	8.3	8.1	7.0	6.0	6.9	8.2	9.5	9.9	10.6	10.5	11.0	11.5	11.6	11.5	11.2	11.1	10.3	9.0	8.2	8.8	8.5	9.8
Corpus Christi, Tex	13.1	11.1	10.0	8.6	7.5	6.7	7.0	7.1	8.2	9.8	10.8	11.8	13.2	15.1	15.8	16.9	17.5	17.4	17.7	17.1	16.2	16.1	15.0	14.8	12.7
Davenport, Iowa	6.1	5.8	5.7	5.1	5.2	5.2	5.8	6.1	7.1	7.7	8.3	8.4	8.9	9.4	9.5	9.8	9.4	9.0	8.5	7.7	6.0	5.5	6.2	5.9	7.2
Denver, Colo	7.5	7.5	6.8	6.9	6.6	6.7	6.8	6.3	6.3	6.7	7.0	6.8	6.7	7.4	8.7	9.4	9.2	9.3	10.1	9.9	9.4	9.0	8.1	7.6	7.8
Des Moines, Iowa	6.0	6.5	6.6	6.4	6.0	5.6	5.5	6.0	7.6	8.5	9.8	10.1	10.6	10.8	10.9	11.1	11.0	10.9	9.7	8.4	7.6	6.9	6.6	6.4	8.1
Detroit, Mich	7.9	7.8	8.2	8.4	8.0	7.8	7.8	8.8	9.5	10.7	11.5	11.4	12.5	11.8	12.5	12.8	11.8	11.2	10.6	9.0	8.1	8.3	8.3	8.1	9.7
Dodge, Kans	13.8	13.0	12.8	11.8	11.1	9.9	9.8	11.0	14.3	16.2	16.5	15.9	17.0	16.3	16.4	16.8	16.8	16.8	17.2	16.1	14.4	14.0	13.6	13.2	14.4
Dubuque, Iowa	4.8	5.2	5.5	5.0	5.1	4.7	5.2	6.5	7.4	7.9	8.6	9.9	10.4	10.5	10.4	10.5	10.0	9.2	8.3	6.7	5.2	5.1	4.5	4.7	7.1
Duluth, Minn	9.6	9.5	10.5	10.0	10.8	10.2	10.2	10.3	10.1	10.0	10.2	11.3	11.2	10.8	11.3	11.6	11.6	10.9	10.3	9.0	7.3	7.6	8.5	9.1	10.1
Eastport, Me	6.5	6.2	6.2	6.0	5.7	5.4	5.7	6.4	6.6	8.0	8.9	10.2	10.7	11.0	10.9	11.1	9.9	9.0	8.3	7.2	7.0	7.6	7.7	6.8	7.9
Elkins, W. Va	1.7	1.5	1.7	1.7	1.7	1.6	2.0	2.4	3.5	4.3	5.3	5.5	5.6	5.7	5.8	6.0	5.1	4.7	3.6	2.6	2.0	1.5	1.4	1.3	3.3
El Paso, Tex	7.9	7.6	7.4	7.8	7.3	7.4	7.7	7.1	7.4	9.0	9.8	9.5	9.8	9.7	8.8	9.9	10.4	11.4	10.8	11.6	11.9	10.2	9.2	8.6	9.1
Erie, Pa	8.7	9.2	8.8	9.0	9.4	8.9	9.0	9.7	10.1	10.3	11.8	11.5	11.8	11.9	10.9	10.9	9.8	9.4	9.2	7.8	7.7	8.1	8.4	8.6	9.6
Escanaba, Mich	7.0	7.5	7.5	7.6	7.8	7.8	7.5	8.1	9.0	9.7	10.0	10.9	11.6	12.1	11.8	11.6	11.5	11.5	10.9	9.3	8.6	8.2	7.5	8.1	9.3
Eureka, Cal	5.2	4.8	4.5	4.7	4.4	4.1	3.7	3.5	3.5	3.4	3.6	4.4	5.4	7.3	8.3	9.3	10.1	10.6	10.5	9.7	9.3	8.5	6.6	5.8	6.3
Evansville, Ind	5.4	5.3	5.1	5.1	5.0	5.1	5.0	6.3	6.5	7.1	7.5	8.1	8.3	8.3	8.7	8.5	8.7	7.7	7.8	6.4	5.4	5.2	5.5	5.0	6.5
Fort Smith, Ark	4.6	4.2	4.6	4.0	4.4	4.1	4.5	4.7	4.7	5.5	5.8	6.5	7.3	7.7	7.8	9.1	8.1	7.4	7.3	6.2	5.3	4.7	4.5	4.3	5.7
Fort Worth, Tex	10.6	10.1	10.2	10.1	9.0	8.5	8.0	8.4	9.8	10.5	11.5	11.0	11.3	12.1	11.9	12.9	13.0	12.7	12.2	11.0	9.9	10.2	10.6	10.4	10.7
Fresno, Cal	8.4	8.5	8.6	7.9	6.6	5.4	4.4	3.8	4.0	3.6	3.6	3.9	4.4	4.3	4.7	5.0	5.8	6.4	6.4	6.6	7.0	7.2	7.5	8.2	5.9
Galveston, Tex	7.3	7.6	7.2	7.3	7.3	6.8	6.6	6.8	7.8	7.9	8.3	8.1	8.3	8.6	9.6	8.9	8.3	8.1	7.8	7.5	7.1	7.2	7.5	7.3	7.7
Grand Haven, Mich	7.0	7.1	7.4	8.0	8.3	8.2	8.2	9.2	9.6	9.8	9.7	10.7	11.1	11.9	11.9	11.9	11.6	10.7	9.6	8.5	7.3	7.4	7.5	7.2	9.2
Grand Junction, Colo	3.9	3.5	3.8	4.0	3.9	4.0	4.3	4.1	3.9	5.0	6.4	6.1	5.6	6.4	7.4	8.6	8.8	9.1	8.5	7.6	6.4	5.6	4.1	4.1	5.6
Green Bay, Wis	6.2	6.4	6.3	5.8	6.1	5.9	6.5	7.4	8.3	9.1	9.7	9.7	10.0	10.7	10.6	10.4	10.1	9.5	8.2	7.3	6.8	6.2	5.9	6.3	7.9
Harrisburg, Pa	4.3	4.0	3.8	3.9	3.4	2.8	3.6	4.5	5.5	6.5	7.8	7.7	8.2	9.3	8.8	9.0	8.9	8.6	8.2	5.9	6.2	5.7	5.1	4.1	6.1
Hatteras, N. C	10.4	10.4	10.2	10.5	10.2	10.0	10.2	11.1	11.7	11.8	12.3	12.9	13.7	14.1	14.4	13.8	13.5	12.4	11.4	11.3	11.0	10.9	10.2	10.5	11.6
Havre, Mont	8.3	9.0	7.6	6.8	7.0	7.3	6.9	7.1	8.5	10.3	10.9	11.3	12.0	11.8	12.0	11.5	11.3	11.6	11.0	11.2	11.5	10.6	8.6	8.2	9.7
Helena, Mont	7.9	7.5	8.2	8.6	8.1	8.2	7.9	6.0	3.8	5.1	6.4	6.9	7.5	8.6	9.5	10.2	10.4	9.8	10.2	9.9	9.5	8.2	7.6	7.7	8.1
Huron, S. Dak	10.9	10.0	10.5	11.1	10.3	10.5	10.7	11.5	12.0	12.8	13.8	13.3	12.5	13.5	13.5	13.2	12.9	12.1	11.3	10.4	9.3	9.3	11.1	11.8	11.6
Independence, Cal	8.4	8.0	7.3	6.8	7.5	6.5	6.4	6.4	6.4	6.2	6.5	6.4	5.4	5.7	8.1	10.0	10.8	11.6	12.4	12.4	12.5	11.8	10.1	8.9	8.4
Indianapolis, Ind	7.8	6.5	6.6	6.1	6.3	6.2	6.3	7.7	8.6	10.4	11.7	11.8	11.3	11.3	11.7	11.3	11.5	11.4	10.4	8.7	7.3	6.7	6.7	7.5	8.8
Jacksonville, Fla	6.1	6.0	5.9	6.2	5.4	5.0	4.6	5.8	6.7	6.0	5.8	6.1	6.9	8.2	9.7	10.3	9.2	9.6	8.1	6.6	6.6	6.3	5.6	5.5	6.8
Jupiter, Fla	7.0	6.9	6.4	6.4	6.2	6.9	6.5	7.6	8.1	9.2	10.1	10.2	10.9	11.5	11.2	10.5	9.4	9.4	8.0	8.0	7.3	7.7	7.6	7.4	8.3
Kalispell, Mont	5.5	5.5	4.8	4.7	6.0	5.5	5.6	6.8	5.6	5.4	5.6	5.6	6.1	6.8	7.5	7.8	8.2	9.3	8.9	8.1	7.5	5.7	4.8	5.7	6.4
Kansas City, Mo	7.0	7.0	6.8	6.7	6.6	6.8	7.1	8.3	9.1	9.3	10.0	10.0	10.7	10.8	11.0	10.6	10.5	10.0	9.5	7.8	6.7	6.7	6.4	6.8	8.4
Keokuk, Iowa	5.7	5.6	5.6	6.0	5.6	5.3	5.5	6.5	7.5	8.6	9.4	8.8	9.8	10.5	10.4	10.3	9.9	9.1	8.4	7.2	5.7	5.5	5.7	5.9	7.4
Key West, Fla	8.4	8.0	7.4	7.1	7.3	6.9	7.2	8.0	9.2	10.2	10.9	11.2	10.9	11.1	10.6	10.4	10.2	9.6	9.6	9.4	8.9	8.7	8.7	8.6	9.1
Kittyhawk, N. C	12.3	12.5	11.7	10.8	10.5	10.5	10.6	11.8	12.6	12.0	11.2	10.8	10.9	11.3	12.9	13.7	14.3	15.5	14.7	12.9	12.3	12.0	11.9	11.5	12.1
Knoxville, Tenn	4.7	4.3	3.9	3.7	3.1	3.3	2.5	3.8	5.3	5.9	6.7	7.6	8.8	8.4	8.6	8.5	8.5	7.5	6.1	5.5	4.9	4.9	4.8	3.9	5.6
La Crosse, Wis	5.9	6.2	6.0	6.4	7.1	6.6	6.1	6.2	6.6	6.7	8.0	8.4	8.7	8.9	9.4	9.5	9.0	8.7	7.8	6.9	6.2	5.4	5.8	5.6	7.1
Lander, Wyo	4.0	3.0	2.8	2.7	2.2	2.5	2.4	1.9	1.9	2.8	3.0	3.4	4.1	5.2	6.3	6.7	6.9	7.6	8.5	8.0	5.9	4.5	4.7	4.5	4.4
Lexington, Ky	7.0	6.7	6.4	6.7	6.4	6.4	6.1	6.3	7.7	8.2	8.9	9.1	9.5	10.3	10.4	10.3	10.1	9.3	9.5	7.4	6.7	6.8	6.6	6.6	7.9
Little Rock, Ark	4.1	4.2	4.2	4.5	4.4	3.9	3.8	4.8	6.3	6.3	7.0	7.2	7.6	8.3	7.9	7.1	8.4	7.5	7.1	5.9	4.6	4.6	4.9	4.3	5.9
Los Angeles, Cal	3.8	2.3	2.8	2.8	2.5	2.5	2.7	2.5	2.6	2.7	2.9	3.4	4.1	5.1	6.5	8.4	9.5	9.7	9.4	9.0	8.2	6.7	5.3	4.3	5.0
Louisville, Ky	5.0	5.1	4.6	4.5	5.0	4.8	5.2	5.3	6.1	7.2	8.3	9.6	9.5	9.6	9.7	9.8	9.5	9.7	8.6	7.7	6.5	5.7	4.8	4.8	6.9
Lynchburg, Va	1.8	1.5	1.5	1.8	1.8	1.7	1.8	2.7	4.1	4.6	5.0	5.0	5.2	5.4	5.6	5.7	5.5	5.1	4.3	2.9	2.3	1.7	1.6	1.7	3.3
Macon, Ga	2.9	3.1	2.7	2.5	2.5	2.2	2.4	3.5	3.9	4.3	4.8	5.3	6.0	6.4	6.8	6.8	7.3	7.7	6.9	4.9	4.3	4.3	3.7	3.0	4.5
Marquette, Mich	7.7	9.0	9.8	9.5	9.9	9.5	8.4	9.5	11.1	11.5	11.2	11.8	12.5	13.3	13.4	12.8	11.9	11.4	9.3	8.4	7.5	7.7	8.4	7.8	10.1
Memphis, Tenn	6.0	5.8	6.3	6.0	5.4	6.0	6.3	7.1	7.5	7.8	7.8	8.1	8.6	9.2	8.9	9.6	9.5	9.3	8.5	7.2	6.3	6.3	6.9	6.4	7.4
Milwaukee, Wis	8.2	8.0	7.9	8.5	8.4	8.7	7.9	7.8	8.1	9.8	10.8	11.4	12.5	13.0	13.8	14.5	14.2	13.0	10.5	9.4	7.9	7.9	7.7	8.3	9.9
Mobile, Ala	3.7	3.5	3.7	3.7	3.7	3.7	3.2	3.5	4.4	4.8	4.9	6.3	7.5	7.6	9.0	10.2	9.5	9.0	8.1	5.4	4.3	3.6	3.7	3.6	5.4
Montgomery, Ala	4.2	4.2	3.5	3.3	3.4	3.2	3.0	3.7	4.3	4.5	4.8	5.4	5.9	7.0	6.7	7.1	7.0	6.6	6.9	5.2	5.0	4.6	4.6	4.0	4.9
Moorhead, Minn	8.4	8.0	7.7	8.5	8.8	9.1	8.8	8.4	9.1	9.9	11.0	12.1	12.1	12.6	12.7	13.0	13.1	12.5	11.5	10.6	8.5	8.2	8.4	8.4	10.1
Mount Tamalpais, Cal	20.5	20.6	20.1	19.7	19.0	19.2	18.4	17.2	15.7	14.5	13.6	12.2	10.9	9.2	8.2	7.6	7.3	8.3	11.0	13.1	15.7	19.0	20.2	20.4	15.1
Nantucket, Mass	7.7	7.7	7.6	7.8	7.6	7.6	8.7	10.0	10.5	10.9	10.8	11.5	11.0	11.3	10.9	10.9	10.5	9.7	8.0	7.9	8.2	7.4	7.4	7.4	9.1
Nashville, Tenn	2.9	2.4	2.7	2.5	2.6	2.6	2.9	4.2	5.3	6.1	6.7	7.4	7.3	8.0	7.7	7.9	7.8	8.0	6.9	5.6	4.2	4.1	3.9	3.0	5.1
Neah Bay, Wash	6.0	5.8	5.3	5.6	5.3	4.2	4.5	4.3	4.1	4.3	4.6	4.7	6.4	7.1	7.6	8.9	10.5	11.3	11.5	11.8	10.3	9.3	8.2	6.5	7.0
New Haven, Conn	5.5	5.2	5.2	5.0	4.8	5.3	6.2	7.0	8.0	9.5	10.6	11.4	12.2	12.7	13.1	12.7	11.5	9.8	7.6	6.4	6.5	6.4	6.1	5.8	8.1
New Orleans, La	4.8	4.6	4.6	4.4	4.0	3.7	3.5	4.0	5.1	6.7	7.2	7.2	8.8	8.4	9.1	9.0	8.2	8.2	7.3	5.9	4.6	4.4	5.2	5.0	6.0

TABLE V.—*Average wind movement, etc.*—Continued.

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
New York, N. Y	10.7	10.2	10.3	9.6	8.9	9.0	8.9	9.4	9.8	10.8	11.2	12.3	12.8	14.8	14.3	14.3	15.9	14.4	13.5	13.1	11.4	11.3	10.3	10.3	11.6
Norfolk, Va	7.4	6.9	6.3	6.6	6.7	6.5	6.7	7.5	8.1	8.2	8.2	8.5	9.2	9.6	9.5	10.1	10.9	10.6	9.1	8.2	8.5	8.0	7.9	8.7	8.3
Northfield, Vt	6.6	6.0	6.2	6.1	5.6	5.4	5.3	6.1	7.9	9.4	10.6	11.5	12.6	12.5	13.0	12.1	11.0	9.4	6.9	6.4	7.0	7.3	6.9	6.8	8.3
North Platte, Nebr	9.8	9.2	9.2	8.7	9.1	8.0	6.9	6.8	8.3	10.1	10.6	10.5	11.0	10.5	10.7	10.7	11.1	11.3	10.8	10.8	10.7	9.8	9.4	9.6	9.7
Oklahoma, Okla	8.5	8.5	8.3	8.2	7.7	7.6	7.5	8.4	10.2	11.4	11.9	11.5	11.9	12.2	11.8	11.5	11.7	11.5	10.8	9.8	8.2	7.8	8.3	8.4	9.7
Omaha, Nebr	7.3	7.1	7.1	6.7	6.3	6.2	6.0	6.9	8.0	8.8	9.5	9.8	10.2	10.0	10.6	10.6	11.0	10.9	10.4	9.1	7.7	7.3	7.7	7.0	8.4
Oswego, N. Y	7.6	7.5	7.6	8.3	8.0	7.0	7.1	7.4	8.4	9.0	9.5	9.7	10.1	9.8	9.7	9.1	8.8	7.8	6.9	6.2	6.4	7.2	7.5	7.6	8.1
Palestine, Tex	5.5	5.5	5.5	5.0	5.0	4.5	4.6	4.9	5.8	6.6	7.3	7.2	7.3	7.3	7.5	8.3	7.5	6.6	6.5	6.2	5.2	5.5	5.3	5.1	6.1
Parkersburg, W. Va	3.2	3.1	2.9	2.5	2.8	2.8	3.3	4.5	4.7	5.4	5.9	6.2	7.1	7.5	7.9	7.1	7.0	6.6	5.8	5.0	4.1	3.4	3.9	3.3	4.8
Pensacola, Fla	6.9	6.4	6.3	6.6	6.6	6.5	6.8	7.1	7.5	8.1	8.7	9.5	9.8	10.7	11.2	11.2	10.9	10.8	9.5	8.3	6.3	6.2	6.4	6.8	8.1
Phenix, Ariz	3.8	3.8	4.1	4.0	3.7	3.7	3.7	3.6	3.6	3.5	3.3	3.7	4.2	4.5	5.2	5.6	6.3	7.0	8.1	7.4	6.2	4.4	4.8	4.1	4.7
Philadelphia, Pa	7.9	7.6	7.3	7.0	6.5	6.5	7.4	8.5	8.8	9.3	9.8	9.8	10.3	10.5	11.0	11.0	11.1	10.1	10.0	8.0	7.8	7.5	7.2	7.4	8.7
Pierre, S. Dak	12.3	11.1	10.6	10.2	9.3	8.9	7.8	8.6	10.0	12.2	13.1	12.7	12.9	12.5	12.7	13.0	13.2	14.0	13.8	13.9	12.8	12.5	12.3	12.0	11.8
Pittsburg, Pa	4.3	4.0	3.7	4.0	3.6	3.9	4.2	5.0	5.7	6.2	6.9	7.5	7.9	8.1	8.0	8.0	7.8	6.8	6.6	6.1	5.5	5.1	4.9	4.9	5.8
Pocatello, Idaho	10.0	10.8	9.6	10.0	9.5	9.0	8.3	8.2	8.4	9.7	9.0	9.5	10.3	10.0	10.5	10.5	10.9	11.6	11.2	11.5	10.5	9.0	8.6	9.1	9.8
Point Reyes Lt., Cal	20.3	19.5	19.5	18.7	19.1	18.5	18.6	18.4	16.7	16.5	16.2	16.2	16.0	15.9	15.9	16.5	17.6	17.9	18.7	19.0	20.4	21.5	20.8	20.2	18.3
Port Crescent, Wash	4.5	3.4	3.1	2.9	2.8	2.6	2.3	2.3	1.8	2.5	3.6	5.3	6.4	6.8	6.5	7.4	7.4	7.3	7.4	8.0	7.7	7.2	6.2	5.0	5.0
Port Huron, Mich	9.1	9.2	9.2	9.8	9.8	9.5	9.3	8.7	10.0	11.0	11.5	11.8	12.1	12.2	12.5	12.5	11.7	11.5	10.7	8.9	8.5	8.5	8.9	8.8	10.2
Portland, Me	4.1	4.3	4.5	4.4	4.3	4.8	5.1	5.9	7.0	8.5	9.2	10.0	10.4	11.3	12.3	11.7	10.6	9.1	7.8	7.0	6.0	5.5	5.2	4.7	7.2
Portland, Oreg	9.9	8.0	6.2	5.1	4.5	4.4	4.5	4.6	4.6	5.6	7.1	7.3	7.5	7.5	8.0	8.1	8.7	8.5	9.3	10.1	10.1	9.9	9.7	9.5	7.4
Pueblo, Colo	5.9	5.4	5.2	5.6	5.5	5.1	5.1	4.7	4.8	4.7	5.1	6.5	6.9	7.1	8.3	8.4	10.1	10.6	10.6	9.4	7.7	7.2	7.2	6.3	6.8
Raleigh, N. C	4.3	4.1	4.1	3.9	3.8	4.1	4.1	5.1	5.7	5.7	5.7	5.5	5.9	6.1	6.6	7.0	7.2	6.5	6.3	4.6	5.2	5.1	5.0	4.6	5.3
Rapid City, S. Dak	6.5	6.5	7.0	6.7	6.3	6.2	6.5	5.8	6.1	6.7	8.2	8.2	9.4	10.0	10.0	10.1	9.5	8.7	8.2	7.8	6.9	5.8	6.2	6.3	7.5
Red Bluff, Cal	4.9	5.0	4.1	4.1	3.4	3.5	2.8	3.2	2.7	3.7	5.0	6.1	6.3	5.6	5.4	5.0	5.3	5.2	5.5	5.2	5.4	5.2	5.5	5.7	4.7
Richmond, Va	3.9	3.8	3.1	3.5	3.6	3.2	4.1	5.0	5.6	6.0	6.6	6.7	7.0	7.3	7.3	7.2	7.8	6.7	6.2	4.8	4.5	4.0	4.1	4.3	5.2
Rochester, N. Y	5.8	6.2	6.5	6.3	7.2	7.2	6.9	7.6	7.9	9.1	9.9	10.1	11.2	11.1	10.6	10.4	10.3	9.3	7.6	6.8	6.0	5.9	5.6	5.5	8.0
Roseburg, Oreg	2.9	1.7	1.9	1.8	1.5	1.6	1.4	1.5	1.3	1.9	2.4	3.4	3.8	4.2	5.3	6.1	6.9	7.6	8.5	9.4	10.1	9.0	6.7	4.3	4.4
Sacramento, Cal	10.0	9.2	9.6	9.9	10.3	9.8	8.9	8.5	7.4	6.9	6.9	6.9	7.1	7.1	7.2	7.3	8.1	9.3	10.3	10.9	10.6	10.6	10.7	10.1	8.9
St. Louis, Mo	7.5	6.9	7.1	6.9	7.0	6.5	7.0	7.4	8.5	9.0	9.2	9.8	9.9	10.7	11.5	10.7	10.2	10.3	9.5	8.6	8.6	8.1	8.5	8.0	8.6
St. Paul, Minn	6.8	6.3	6.3	5.9	6.1	5.6	6.4	6.9	7.3	7.6	8.5	9.7	10.1	10.8	10.7	10.5	11.0	10.7	9.9	8.8	7.6	6.9	6.7	6.2	8.1
Salt Lake City, Utah	4.6	4.4	3.8	3.6	3.6	3.6	3.9	3.3	3.0	2.4	3.3	4.8	6.2	7.7	8.5	9.6	11.5	11.9	10.6	8.9	6.4	6.0	6.7	5.4	6.0
San Antonio, Tex	6.3	5.1	4.8	4.6	4.5	4.1	3.7	4.1	5.8	7.4	7.4	6.9	7.8	8.5	8.5	9.0	9.2	8.8	9.8	9.9	9.2	8.5	7.6	6.7	7.0
San Diego, Cal	3.3	3.4	3.3	3.1	3.6	3.5	3.7	3.6	3.6	3.3	3.8	5.5	7.4	9.2	10.1	10.3	10.8	10.2	9.6	9.2	7.7	6.2	4.9	3.9	6.0
Sandusky, Ohio	6.6	6.9	7.2	6.9	7.0	6.8	7.4	7.4	7.4	7.9	8.3	8.4	8.5	8.5	8.6	8.4	7.5	7.3	6.8	6.5	6.1	6.1	6.7	6.8	7.3
San Francisco, Cal	15.3	13.4	11.8	9.8	9.5	8.4	7.5	7.4	6.9	7.1	7.6	8.1	9.6	13.2	16.8	20.4	22.6	23.7	24.2	25.0	23.2	21.2	19.4	16.8	14.5
San Luis Obispo, Cal	2.6	2.2	2.1	1.9	2.2	2.4	2.4	2.4	2.5	2.7	3.1	3.6	4.7	5.9	6.9	7.7	8.3	8.5	8.1	7.7	6.7	5.4	3.9	3.5	4.5
Santa Fe, N. Mex	8.3	7.5	5.5	4.9	4.7	4.0	3.5	2.5	2.7	4.1	4.9	6.1	7.1	7.4	9.0	9.4	8.3	7.6	9.8	10.4	10.4	9.3	9.4	8.7	6.9
Sault Ste. Marie, Mich	6.3	6.4	5.7	6.5	6.3	5.4	5.4	5.9	6.8	8.4	9.7	10.5	10.7	11.7	12.2	13.2	13.7	12.8	11.4	9.7	8.2	6.6	6.7	6.4	8.6
Savannah, Ga	4.9	5.1	4.5	4.6	4.5	4.1	4.2	5.4	5.8	6.2	5.7	6.4	7.4	8.1	8.5	9.1	9.0	8.8	7.8	6.4	6.4	5.7	5.5	5.1	6.2
Seattle, Wash	3.8	3.5	3.5	3.2	3.4	3.7	3.5	3.7	4.0	4.2	4.8	5.3	5.7	5.9	5.9	6.3	6.8	6.5	6.6	6.2	6.3	6.2	5.4	4.6	5.0
Shreveport, La	5.5	4.7	4.5	4.6	4.6	4.4	4.2	4.8	6.2	5.8	6.4	6.1	7.0	6.4	6.5	7.1	7.1	7.7	7.2	6.2	5.8	5.8	5.7	5.4	5.8
Sioux City, Iowa	11.9	11.7	10.3	10.9	11.8	10.6	10.6	10.8	11.0	12.9	13.2	13.8	14.9	15.8	16.0	16.0	15.1	14.9	14.6	13.4	12.7	11.7	11.8	12.0	12.8
Spokane, Wash	3.6	3.3	3.3	3.4	3.5	3.6	4.0	4.2	5.2	5.3	6.7	6.9	7.0	6.8	7.4	7.6	7.8	7.9	7.6	7.5	7.3	6.4	5.4	4.5	5.7
Springfield, Ill	6.8	6.8	6.4	6.4	6.5	6.4	6.5	7.2	8.2	8.5	8.7	9.0	9.3	9.4	9.4	9.6	9.8	9.6	9.2	7.0	5.7	6.0	6.8	7.0	7.8
Springfield, Mo	8.8	8.3	7.9	7.7	7.0	7.2	7.3	7.5	8.5	9.7	10.0	9.9	10.0	9.8	9.2	9.6	9.3	9.8	9.5	8.7	7.2	7.5	7.7	8.0	8.6
Tacoma, Wash	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tampa, Fla	3.6	3.8	3.8	4.0	4.1	3.6	4.3	5.4	6.0	6.4	6.7	6.5	6.8	6.8	7.5	7.4	6.9	6.8	5.6	5.4	4.4	3.9	3.7	3.8	5.3
Toledo, Ohio	7.5	7.5	7.3	7.4	7.9	7.9	8.0	8.9	9.5	10.3	10.5	10.8	11.3	12.0	11.3	11.6	11.8	11.0	10.4	8.3	7.3	7.3	7.9	7.7	9.2
Valentine, Nebr	10.7	10.7	10.4	10.0	9.9	10.3	10.0	9.4	9.6	11.0	11.2	11.7	12.5	12.4	12.4	12.5	13.0	12.9	12.1	11.8	10.2	9.8	9.5	9.3	11.0
Vicksburg, Miss	4.8	4.9	4.7	4.6	4.0	4.4	4.1	4.6	4.4	4.7	5.0	5.5	5.7	5.7	6.4	5.8	5.6	6.6	5.5	4.7	4.5	4.9	4.8	5.3	5.0
Walla Walla, Wash	5.2	5.8	5.5	5.1	5.4	5.2	5.6	5.7	5.4	5.9	6.0	6.4	6.3	6.3	5.9	6.2	6.4	6.3	6.4	6.5	6.4	5.3	4.2	5.3	5.8
Washington, D. C	4.2	3.8	3.9	3.7	3.7	3.9	4.0	5.0	5.8	6.7	7.6	7.9	8.5	8.6	8.5	8.2	7.7	7.0	6.0	5.4	4.2	3.9	3.9	3.8	5.7
Wichita, Kans	7.6	7.8	7.6	7.5	7.5	7.0	6.7	7.8	8.7	9.0	9.9	10.7	10.8	10.8	10.5	10.3	10.0	10.0	9.4	8.7	8.1	7.5	7.9	7.8	8.7
Williston, N. Dak	7.8	7.2	7.6	6.7	6.4	6.4	6.5	7.0	8.2	9.8	10.9	11.8	13.4	12.9	12.9	12.8	13.3	13.3	12.6	12.5	12.1	19.8	9.6	8.5	10.0
Wilmington, N. C	5.7	5.6	5.4	4.9	5.1	4.9	5.3	6.3	7.1	6.7	7.5	7.9	8.9	10.3	10.1	10.3	10.5	10.2	9.0	7.8	6.7	6.4	6.0	5.6	7.3
Winnemucca, Nev	7.8	9.4	9.6	9.5	8.4	8.6	8.7	8.4	7.6	7.2	8.0	8.7	9.5	9.0	9.5	10.3	9.9	10.6	10.5	11.0	10.9	9.0	7.9	7.8	9.1
Yankton, S. Dak	8.7	10.0	9.8	7.5	6.3	7.6	7.4	8.4	9.4	9.8	11.3	11.6	12.0	11.6	11.5	11.1	10.8	10.4	9.5	8.6	7.0	7.4	8.1	8.1	9.3
West Indies.																									
Basseterre, St. Kitts	11.0	10.4	10.8	10.8	10.9	10.5	11.8	12.3	12.6	13.4	13.0	13.2	12.9	13.1	12.2	11.8	11.0	10.3	10.7	10.9	11.0	11.0	10.7	10.9	11.5
Bridgetown, Bar	5.5	5.6	5.5	5.2	5.3	5.5	7.6	10.1	11.1	11.9	12.3	12.3	11.8	11.5	10.9	9.8	9.0	7.6	6.3	6.4	6.1	5.9	5.9	6.0	8.1
Cienfuegos, Cuba	5.8	5.7	6.0	6.2	6.1	6.0	5.6	6.4	7.2	7.4	7.9	7.9	8.8	9.1	9.5	9.1	8.0	6.7	5.3	5.7	5.8	5.5	6.0	6.5	6.8
Havana, Cuba	6.6	6.2	5.9	5.8	5.5	5.6	5.6	6.8	9.5	11.0	11.3	12.9	15.4	18.3	18.5	17.5	15.3	13.9	12.6	11.5	10.1	9.4	7.5	6.5	10.4
Kingston, Jamaica	4.6	4.9	4.9	4.7	5.3	5.1	5.1	4.3	4.3	4.9	6.8	9.4	11.4	12.4	12.0	10.6	8.9	6.8	4.7	3.9	3.9	4.0	4.5	4.3	6.3
Port of Spain, Trin	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Puerto Principe, Cuba	4.9	5.1	4.9	5.0	5.1	5.1	5.6	9.7	13.3	13.1	12.7	11.6	11.6	11.5	12.5	12.5	11.9	11.2	9.0	7.4	7.0	5.6	5.5	5.0	8.6
Roseau, Dominica	4.0	4.6	4.5	4.5	3.8	4.3	3.7	3.7	4.9	6.0	6.7	7.0	7.0	6.2	6.1	5.5	4.6	4.1	3.8	3.6	3.7	4.0	4.1	4.1	4.8
San Juan, Porto Rico	10.0	9.3	9.0	7.8	7.6	8.3	8.8	11.0	13.9	16.3	18.0	18.7	18.4	17.6	17.7	16.8	16.4	16.1	14.8	13.5	13.2	13.0	12.2	11.4	13.3
Santiago de Cuba	2.7	2.5	2.3	2.4	2.5	2.3	2.5	3.9	4.7	4.7	5.3	6.0	7.0	7.0	7.0	5.7	4.8	4.2	3.2	3.0	2.5	2.8	2.8	2.7	3.9
Santo Domingo, S. D.	5.1	5.2	5.4	5.2	5.0	5.1	5.1	6.5	6.0	6.3	5.4	6.5	5.7	6.5	6.9	6.2	5.6	5.7	5.2	5.5	5.6	5.5	5.5	5.2	5.7
Willemstad, Curaçao	11.9	11.3	10.8	10.7	10.2	10.1	12.0	14.5	15.3	15.5	15.8	15.8	16.2	16.4	16.8	15.9	15.8	15.3	14.1	13.9	13.4	12.5	12.5	11.9	13.7

TABLE VI.—*Resultant winds from observations at 8 a. m. and 8 p. m., daily, during the month of July, 1900.*

Stations.	Component direction from— N.	S.	E.	W.	Resultant. Direction from—	Duration.
New England.	*Hours.*	*Hours.*	*Hours.*	*Hours.*	°	*Hours.*
Eastport, Me	14	24	4	35	s. 72 w.	33
Portland, Me	10	33	6	26	s. 41 w.	30
Northfield, Vt	18	35	5	11	s. 19 w.	18
Boston, Mass	13	20	7	36	s. 76 w.	30
Nantucket, Mass	13	27	7	35	s. 63 w.	31
Block Island, R. I	8	25	6	39	s. 62 w.	37
New Haven, Conn	20	26	7	27	s. 73 w.	21
Middle Atlantic States.						
Albany, N. Y	13	31	5	22	s. 43 w.	25
Binghamton, N. Y.†	13	7	1	17	n. 69 w.	17
New York, N. Y	15	31	7	23	s. 45 w.	23
Harrisburg, Pa.†	4	10	5	16	s. 61 w.	12
Philadelphia, Pa	14	27	9	29	s. 57 w.	24
Atlantic City, N. J	10	30	8	30	s. 48 w.	30
Cape May, N. J.	11	33	11	21	s. 24 w.	24
Baltimore, Md	5	26	10	31	s. 45 w.	30
Washington, D. C	15	30	11	20	s. 31 w.	18
Lynchburg, Va	22	19	9	28	n. 81 w.	19
Norfolk, Va	8	35	15	18	s. 6 w.	27
Richmond, Va	13	33	12	20	s. 22 w.	22
South Atlantic States.						
Charlotte, N. C	13	32	13	20	s. 20 w.	20
Hatteras, N. C	4	37	14	25	s. 18 w.	35
Kittyhawk, N. C.*	4	18	10	11	s. 4 w.	14
Raleigh, N. C	14	26	11	24	s. 47 w.	18
Wilmington, N. C	8	27	9	33	s. 51 w.	31
Charleston, S. C	4	32	9	27	s. 39 w.	28
Augusta, Ga	9	31	9	25	s. 36 w.	27
Savannah, Ga	7	29	4	32	s. 52 w.	36
Jacksonville, Fla	7	36	27	13	s. 26 e.	32
Florida Peninsula.						
Jupiter, Fla	3	35	30	6	s. 46 e.	46
Key West, Fla	2	17	53	0	s. 74 e.	55
Tampa, Fla	13	16	33	12	s. 82 e.	21
Eastern Gulf States.						
Atlanta, Ga	14	27	9	29	s. 57 w.	24
Macon, Ga†	6	11	7	13	s. 50 w.	8
Pensacola, Fla.†	15	6	14	6	n. 42 e.	12
Mobile, Ala	15	22	23	14	s. 52 e.	11
Montgomery, Ala	7	29	21	20	s. 3 e.	22
Meridian, Miss.†	3	18	6	10	s. 15 w.	16
Vicksburg, Miss	5	34	29	10	s. 33 e.	35
New Orleans, La	9	33	25	15	s. 23 e.	25
Western Gulf States.						
Shreveport, La	8	33	25	7	s. 36 e.	31
Fort Smith, Ark	11	23	33	5	s. 67 e.	30
Little Rock, Ark	12	36	18	13	s. 12 e.	24
Corpus Christi, Tex	4	40	32	5	s. 37 e.	45
Fort Worth, Tex†	5	19	9	6	s. 12 e.	14
Galveston, Tex	2	40	20	12	s. 11 e.	39
Palestine, Tex	5	46	16	4	s. 16 e.	43
San Antonio, Tex	7	29	43	0	s. 63 e.	48
Ohio Valley and Tennessee.						
Chattanooga, Tenn	13	29	10	28	s. 48 w.	24
Knoxville, Tenn	14	22	9	33	s. 72 w.	25
Memphis, Tenn	12	36	12	12	s.	24
Nashville, Tenn	11	28	12	24	s. 35 w.	21
Lexington, Ky†	5	17	7	8	s. 5 w.	12
Louisville, Ky	17	30	11	15	s. 17 w.	14
Evansville, Ind.†	7	16	6	6	s.	9
Indianapolis, Ind	14	29	11	20	s. 31 w.	18
Cincinnati, Ohio	14	24	19	19	s.	10
Columbus, Ohio	10	32	9	25	s. 36 w.	27
Pittsburg, Pa	18	18	8	33	w.	25
Parkersburg, W. Va	19	28	9	17	s. 42 w.	12
Elkins, W. Va	14	21	10	26	s. 66 w.	18
Lower Lake Region.						
Buffalo, N. Y	13	22	3	36	s. 75 w.	34
Oswego, N. Y	8	24	11	30	s. 50 w.	25
Rochester, N. Y	16	24	7	39	s. 76 w.	33
Erie, Pa	13	18	5	38	s. 81 w.	33
Cleveland, Ohio	13	30	15	18	s. 10 w.	17
Sandusky, Ohio	11	23	17	26	s. 37 w.	15
Toledo, Ohio	9	27	13	26	s. 36 w.	22
Detroit, Mich	11	27	13	28	s. 43 w.	22
Upper Lake Region.						
Alpena, Mich	24	21	7	23	n. 79 w.	16
Escanaba, Mich	22	27	7	14	s. 54 w.	9
Grand Haven, Mich	15	23	13	28	s. 63 w.	17
Marquette, Mich	26	18	11	27	n. 63 w.	18
Port Huron, Mich	19	28	8	26	s. 63 w.	20
Sault Ste. Marie, Mich	10	15	12	35	s. 78 w.	24
Chicago, Ill	13	22	21	23	s. 13 w.	9
Milwaukee, Wis	18	24	11	25	s. 60 w.	16
Green Bay, Wis	20	24	15	13	s. 27 w	4
Duluth, Minn	33	8	23	16	n. 16 e.	26
North Dakota.						
Moorhead, Minn	28	18	20	12	n. 39 e.	13
Bismarck, N. Dak	27	13	20	17	n. 12 e.	14
Williston, N. Dak	30	16	11	16	n. 20 w.	15
Upper Mississippi Valley.						
St. Paul, Minn	21	22	13	17	s. 76 w.	4
Upper Mississippi Valley—Cont'd.	*Hours.*	*Hours.*	*Hours.*	*Hours.*	°	*Hours.*
La Crosse, Wis. †	8	18	8	4	s. 22 e.	11
Davenport, Iowa	14	23	15	25	s. 48 w.	14
Des Moines, Iowa	17	27	15	21	s. 31 w.	12
Dubuque, Iowa	19	27	12	19	s. 41 w.	11
Keokuk, Iowa	13	28	11	27	s. 47 w.	22
Cairo, Ill	14	36	12	12	s.	22
Springfield, Ill	11	29	12	26	s. 38 w.	23
Hannibal, Mo †	4	15	7	10	s. 15 w.	11
St. Louis, Mo	16	34	9	13	s. 13 w.	18
Missouri Valley.						
Columbia, Mo.*	6	16	6	9	s. 17 w.	10
Kansas City, Mo	15	31	23	8	s. 43 e.	22
Springfield, Mo	14	34	16	9	s. 19 e.	21
Lincoln, Nebr	18	33	16	6	s. 34 e.	18
Omaha, Nebr	20	28	23	6	s. 65 e.	19
Valentine, Nebr	22	26	18	13	s. 51 e.	6
Sioux City, Iowa†	8	17	7	9	s. 13 w.	9
Pierre, S. Dak	18	25	22	12	s. 55 e.	12
Huron, S. Dak	16	18	25	15	s. 79 e.	10
Yankton, S. Dak †	5	10	5	15	s. 63 w.	11
Northern Slope.						
Havre, Mont	24	14	16	27	n. 48 w.	15
Miles City, Mont	25	15	19	17	n. 11 e.	12
Helena, Mont	10	23	8	37	s. 66 w.	32
Kalispell, Mont	16	15	11	37	n. 88 w.	26
Rapid City, S. Dak	23	15	15	27	n. 56 w.	14
Cheyenne, Wyo	25	22	15	18	n. 45 w.	4
Lander, Wyo	22	18	13	25	n. 72 w.	13
North Platte, Nebr	16	28	20	9	s. 43 e.	16
Middle Slope.						
Denver, Colo	18	27	15	16	s. 6 w.	9
Pueblo, Colo	24	14	15	16	n. 6 w.	10
Concordia, Kans	12	37	15	4	s. 24 e.	27
Dodge, Kans	10	38	19	4	s. 28 e.	32
Wichita, Kans	10	45	12	4	s. 13 e.	36
Oklahoma, Okla	9	40	17	4	s. 23 e.	35
Southern Slope.						
Abilene, Tex	10	36	28	2	s. 45 e.	37
Amarillo, Tex	9	45	10	7	s. 5 e.	36
Southern Plateau.						
El Paso, Tex	18	10	37	9	n. 74 e.	29
Santa Fe, N. Mex	12	29	27	10	s. 45 e.	24
Flagstaff, Ariz	27	20	2	39	n. 81 w.	38
Phenix, Ariz	12	8	21	31	n. 68 w.	11
Yuma, Ariz	8	26	12	30	s. 45 w.	26
Independence, Cal	19	18	13	31	n. 87 w.	18
Middle Plateau.						
Carson City, Nev	13	19	5	35	s. 79 w.	31
Winnemucca, Nev	20	17	12	30	n. 81 w.	18
Cedar City, Utah	6	37	21	18	s. 6 e.	31
Salt Lake City, Utah	32	15	18	16	n. 7 e.	17
Grand Junction, Colo	15	19	21	22	s. 14 w.	4
Northern Plateau.						
Baker City, Oreg	22	29	12	14	s. 16 w.	7
Boise, Idaho	17	20	19	25	s. 63 w.	7
Pocatello, Idaho	12	31	13	20	s. 20 w.	20
Spokane, Wash	18	24	13	24	s. 61 w.	12
Walla Walla, Wash	5	42	6	20	s. 21 w.	40
North Pacific Coast Region.						
Neah Bay, Wash	10	12	10	41	s. 87 w.	31
Port Crescent, Wash*	4	1	0	29	n. 84 w.	29
Seattle, Wash	21	17	11	23	n. 72 w.	13
Tacoma, Wash	30	18	3	25	n. 52 w.	28
Astoria, Oreg	22	19	3	35	n. 85 w.	32
Portland, Oreg	27	17	8	31	n. 64 w.	26
Roseburg, Oreg	45	2	18	10	n. 10 e.	44
Middle Pacific Coast Region.						
Eureka, Cal	27	13	8	34	n. 62 w.	30
Mount Tamalpais, Cal	23	8	1	43	n. 70 w.	45
Red Bluff, Cal	22	20	24	7	n. 83 e.	17
Sacramento, Cal	4	44	12	20	s. 11 w.	41
San Francisco, Cal	1	19	0	51	s. 70 w.	54
South Pacific Coast Region.						
Fresno, Cal	37	0	1	44	n. 49 w.	57
Los Angeles, Cal	3	22	9	40	s. 59 w.	36
San Diego, Cal	21	18	5	36	n. 84 w.	31
San Luis Obispo, Cal	15	14	4	32	n. 88 w.	28
West Indies.						
Basseterre, St. Kitts Island	11	0	58	0	n. 78 e.	60
Bridgetown, Barbados	11	4	55	0	n. 83 e.	55
Cienfuegos, Cuba	32	4	41	3	n. 54 e.	47
Havana, Cuba	13	5	54	0	n. 81 e.	48
Kingston, Jamaica	51	2	18	2	n. 18 e.	52
Port of Spain, Trinidad	12	8	39	3	n. 84 e.	36
Puerto Principe, Cuba	17	3	51	3	n. 74 e.	50
Roseau, Dominica, W. I	21	6	38	9	n. 62 e.	33
San Juan, Porto Rico	1	11	57	1	s. 80 e.	57
Santiago de Cuba, Cuba	31	14	31	4	n. 57 e.	32
Santo Domingo, S. Domingo, W. I.	57	0	8	2	n. 6 e.	56
Turks Island, W. I.†	1	7	27	0	s. 78 e.	28
Willemstad, Curaçao	4	4	59	0	e.	59

* From observations at 8 p. m. only. † From observations at 8 a. m. only.

TABLE VII.—*Thunderstorms and auroras, July, 1900.*

States.	No. of stations.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.		
																																		No.	Days.	
Alabama	52	T.	7	6	5		1	2	3	3	3	1	4	3	1	4	4	2	3	5	4	5	5		3	3	3	6	3	5	2	4	3	103	29	T.
		A.																																0	0	A.
Arizona	56	T.										2	6	5	3	2	1		2	7	9	9	5								4	9	5	69	14	T.
		A.																																0	0	A.
Arkansas	57	T.	1	2	2	7	7	1		4	1	3	10	2	3	2	4	5	4	4	5	11	9	11	7	8	8			5	7	6	2	141	28	T.
		A.																																0	0	A.
California	167	T.	1	2																		6	8	2	1	1					3		1	25	9	T.
		A.																																0	0	A.
Colorado	81	T.	8	1	2	18	2		1	7	4	7	4	8	3	3	13	2	1	1	4	2	4	11	15	18	9	12	5	1	3	1	1	171	30	T.
		A.	1																															1	1	A.
Connecticut	21	T.					7	8	12				1	10			9	1		1			6				11	2						68	11	T.
		A.																														1		1	1	A.
Delaware	5	T.			1	2	2							4						2		3	1		3	1	2							21	10	T.
		A.																																0	0	A.
Dist. of Columbia	4	T.				1	1			1											1	1		1	1	1	1							9	9	T.
		A.																																0	0	A.
Florida	47	T.	7	6	3	8	7	7	7	9	8	11	10	5	7	11	11	9	9	10	12	7	6	2	3	7	10	9	12	10	9	9	11	247	31	T.
		A.																																0	0	A.
Georgia	55	T.	14	8	5				2	13			8	3	9	3	1	1	1	1	4	5	3	6	12	5	5	7	6	5	5	3	2	137	26	T.
		A.																																0	0	A.
Idaho	34	T.		1	2	3								1	1		4						1	3	5	4	5	4					4	38	13	T.
		A.																								1								1	1	A.
Illinois	92	T.	6	17	7	1	11	13	14	6	1	12	2	3	12	2	10	20	8	4	14	16	1		2	32	2				2			218	25	T.
		A.																											1					1	1	A.
Indiana	58	T.		9	4	2	2	6	20	4			10	2			3	12	16	8	8	15	1			16	4			1	15	2		160	23	T.
		A.										1			1					1						1								4	4	A.
Indian Territory	11	T.				6	1				1		3	1				1	1			3		2		3	1						1	24	11	T.
		A.																																0	0	A.
Iowa	149	T.		20	11	2	7	10	13		6	12		7	5	14	18	10		2	22	4		1	18	3				11		1	2	199	21	T.
		A.																																0	0	A.
Kansas	77	T.	5	1		11	3		13		4	12	16	6			8	19			10	9	1	6	7	20				6	1	2		160	20	T.
		A.																																0	0	A.
Kentucky	41	T.	2	2	5	7	1	6	6	6		1	2	7	2		2	5	12	12	13	6	5	9	4	11	8	2		3	6			145	26	T.
		A.																																0	0	A.
Louisiana	46	T.	4	3	1	4	5	6	1	2	6	11	6	3	2	2	6	7	7	6	6	7	5	6	5	6	5	3	6	5	5	6	3	150	31	T.
		A.																																0	0	A.
Maine	19	T.						1	5	3				7	1	1	1	6	4	3							5		1			4	1	43	14	T.
		A.																												1				1	1	A.
Maryland	48	T.			1	13	15	9	4	7			2	16	1				5	9	17	8	4	13	19	7	20	4			2	4	2	182	23	T.
		A.																																0	0	A.
Massachusetts	48	T.			2	1		6	13	3	2			24	1		5	1	2	9		1	10			2	21	1						104	17	T.
		A.																																0	0	A.
Michigan	106	T.	1	4	13	13	12	13	17	2	1	6	6	1	5	12	10	12	10	1	2	13	1	3	6	10				4	10	2	3	193	28	T.
		A.																																0	0	A.
Minnesota	67	T.	6	12	19	12	16	5	7		7	4		1	9	13	9	3		2	13		4	9	9				10	13	1	1	2	187	24	T.
		A.																																0	0	A.
Mississippi	44	T.	6	3	6	6	2	1		6	5	8	9	5		4	4	7	8	8	9	9	7	3	3	3	7	7	6	7	6	6	6	167	29	T.
		A.																																0	0	A.
Missouri	95	T.	17	9		7	20	5	17	9		29	32	24	1	1	15	29	5	2	26	17	6	6	36	32	4			4	4			357	27	T.
		A.																																0	0	A.
Montana	40	T.	1	1	1	5	5	1		3				3			1				1	2	4	2	2	5	7	9	3					56	18	T.
		A.																																0	0	A.
Nebraska	142	T.	9	18	9	10	2	4	1	1	2	13	17	1	7	13	31	13	1	3	21	5		6	27	3	1	1	4	9				222	27	T.
		A.																																0	0	A.
Nevada	40	T.	1	2	1				1						1	1						1	2	9	5	2	2				1	2	5	36	15	T.
		A.																																0	0	A.
New Hampshire	19	T.		2				4	7	4	2		3	11	2			3	2	4			5			1	8	2				1	1	62	17	T.
		A.																																0	0	A.
New Jersey	51	T.			10	26	26	23	16	15	3			21	3		10	1	6	6	4	8	24	2	5	4	24	5				7	4	253	23	T.
		A.																																0	0	A.
New Mexico	31	T.	1		4	4			4	3	1	5	2	2	2		1		3	2	1	2	2	5	2	4	6		4	4	5	2		71	24	T.
		A.																																0	0	A.
New York	99	T.			12	17	16	34	26	15	5	2	36	18	2	5	38	23	28	7	1	11	9		3	17	18	4	2	1	4	12	8	374	28	T.
		A.																																0	0	A.
North Carolina	56	T.	4	9	1	5	4	6	7	16	3	1	1	8	8	5	1	1	1		4	4	9	15	11	9	12	13	5	3	1	5	1	173	30	T.
		A.																																0	0	A.
North Dakota	48	T.	3	2	5	4	3	1			1			1					2	4			4	1		1			4					36	14	T.
		A.		1																														1	1	A.
Ohio	128	T.		3	16	19	23	11	27	15	1		26	6			1	30	27	16	36	17	3	8	10	20	16			1	31	3	11	377	25	T.
		A.																																0	0	A.
Oklahoma	23	T.				7	1				1		1	1				5	1		1	3		1		4								26	11	T.
		A.																																0	0	A.
Oregon	74	T.										1	1													2							4	8	4	T.
		A.																																0	0	A.
Pennsylvania	91	T.			21	28	30	22	23	8	1		7	18				5	10	8	11	11	11	5	17	4	15	1	1		2	9	1	269	24	T.
		A.				1																												1	1	A.
Rhode Island	7	T.							1					1													2							4	3	T.
		A.																																0	0	A.
South Carolina	46	T.	8	11	5	2	1	3	2	8	1	1	6	8	3	1	3	1		2	8	2	4	11	11	10	5	11	8	7	5	4	2	154	30	T.
		A.																																0	0	A.
South Dakota	56	T.	3	7	11	11	7	2	1		3			3	3	10	8	3		3	4		4	1					5	6			2	97	20	T.
		A.																																0	0	A.
Tennessee	56	T.		9						12												9	18	11	10		16	13		7	9			114	10	T.
		A.																																0	0	A.
Texas	95	T.	3		8	10	4	3	1	2	9	7	2	2	2	8	11	5	3	8	6	5	7	4	2	3	6	9	3	2	11	13	9	168	30	T.
		A.																																0	0	A.
Utah	47	T.		3	3												4			1			4	2	5	1		2					1	26	12	T.
		A.																																	0	A.
Vermont	16	T.			1		1	3	2	3	1		1	4			1	3	3	2			3			1	3	1				3	2	38	17	T.
		A.																																0	0	A.
Virginia	50	T.			4	7	5	3	5	4	2			9					2		7	6	5	11	10	4	8	6				5		103	18	T.
		A.																																0	0	A.
Washington	64	T.				3	1			2				1									1			1	2						13	24	8	T.
		A.																																0	0	A.
West Virginia	48	T.			2	11	8	6	5					5				4	6	11	16	7	7	11	6	2	7	4					1	119	18	T.
		A.																																0	0	A.
Wisconsin	60	T.	9	16	18	15	12	10	15		2	16	1	3	8	16	12	6	3	1	8		1	2	3	4			2	7		2		192	25	T.
		A.																																0	0	A.
Wyoming	31	T.	2	3	4	3	1	2		1	1		1	1		5	6			2	1			4	4	1	1	8	3	1	1			56	22	T.
		A.																																0	0	A.
Sums	2,893	T.	129	192	225	306	272	237	299	197	88	165	236	275	107	138	266	255	196	177	309	250	220	205	292	286	290	146	93	128	155	128	114	6,376	....	T.
		A.	1	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	2	0	0	1	1	0	1	0	10	....	A.

TABLE VIII.—*Average hourly sunshine (in percentages), July, 1900.*

Stations.	Instrument.	Percentages for each hour of local mean time ending with the respective hour.																Hours of sunshine.			
		A. M.								P. M.								Total.			Personal estimate.
		5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	Actual.	Possible.	Percent of possible.	
																		Hours.	*Hours*		
Albany, N. Y	T.	28	30	55	64	78	85	88	89	90	88	79	77	66	58	37	24	312.5	465.2	67	53
Atlanta, Ga.	T.	50	43	60	67	73	79	79	80	81	80	77	71	75	75	45	39	308.0	439.7	70	51
Atlantic City, N. J	T.	57	54	67	85	90	95	98	97	97	96	94	88	81	57	61	67	374.5	453.0	83	65
Baltimore, Md	T.	29	29	38	55	78	80	84	84	81	87	83	70	66	45	27	27	286.8	453.0	63	56
Binghamton, N. Y	T.	23	22	27	42	70	77	80	80	82	84	70	77	66	49	38	35	276.2	461.8	60	42
Bismarck, N. Dak	P.	54	61	81	83	87	86	82	85	72	80	80	86	80	77	73	62	371.6	479.6	77	72
Boise, Idaho	P.	84	85	88	95	97	95	91	92	95	96	96	94	90	84	80	77	423.6	468.4	90	83
Boston, Mass	T.	62	63	72	74	86	84	88	79	79	72	70	64	62	52	46	34	330.0	461.8	69	51
Buffalo, N. Y	T.	37	41	53	71	87	89	92	95	97	96	93	87	77	71	56	40	354.7	465.2	76	39
Cedar City, Utah	T.	87	84	85	92	96	99	97	89	90	91	88	88	87	79	71	70	395.4	450.1	88	80
Charleston, S. C.	T.	14	16	40	55	60	68	51	76	64	55	63	62	57	36	26	25	226.7	437.2	52	51
Chattanooga, Tenn	T.	57	42	42	57	70	80	84	87	88	82	83	74	53	45	43	52	292.8	442.0	66	55
Cheyenne, Wyo	P.	63	67	81	90	82	84	80	81	75	66	60	72	73	70	62	55	337.9	458.6	74	60
Chicago, Ill	T.	55	58	60	54	49	49	68	68	70	70	72	69	56	49	51	45	275.9	461.8	60	55
Cincinnati, Ohio	T.	64	62	66	75	86	92	92	93	91	87	81	83	82	80	66	55	363.9	453.0	80	54
Cleveland, Ohio	T.	74	71	71	69	74	81	80	79	79	72	66	62	57	45	42	40	309.4	461.8	67	57
Columbia, Mo.	T.	81	82	78	81	80	82	82	84	91	84	75	75	69	75	74	64	357.4	453.0	79	55
Columbus, Ohio	T.	57	52	54	65	80	80	78	88	83	82	78	65	66	58	55	56	317.0	455.2	70	59
Denver, Colo	P.	73	78	84	80	86	86	84	76	71	79	76	64	63	61	43	24	328.6	455.2	72	63
Des Moines, Iowa	T.	29	32	50	61	67	72	74	76	82	87	86	73	65	53	52	50	300.1	461.8	65	53
Detroit, Mich	T.	20	23	40	65	74	66	68	76	68	74	70	64	62	50	36	35	267.6	461.8	58	50
Dodge, Kans	P.	80	80	88	87	85	89	92	92	92	94	90	86	77	76	75	70	385.3	450.1	86	74
Dubuque, Iowa	T.	36	40	50	61	69	82	84	89	95	93	91	80	74	67	67	66	337.5	461.8	73	63
Eastport, Me	P.	40	41	48	56	57	59	73	67	72	70	66	59	61	54	35	25	265.4	471.7	56	39
Elkins, W. Va.	T.	10	6	12	46	69	81	90	86	84	75	76	71	62	53	15	12	257.7	453.0	57	48
Erie, Pa	T.	44	44	45	51	67	80	84	85	92	89	76	71	59	55	48	50	305.9	461.8	66	53
Escanaba, Mich	T.	38	42	39	41	46	54	55	58	55	55	48	48	37	32	29	30	211.9	475.7	45	44
Eureka, Cal	P.	14	12	15	20	28	44	58	68	77	79	79	76	71	67	65	65	246.4	458.6	54	54
Fresno, Cal.	T.	95	93	94	95	96	94	97	97	94	97	96	97	96	94	91	90	424.7	447.4	95	90
Galveston, Tex	P.	......	16	57	61	65	69	67	68	68	73	70	69	65	60	22	0	256.9	427.4	60	40
Grand Junction, Colo	P.	96	95	80	85	91	90	93	93	85	84	85	85	89	80	68	83	389.5	453.0	86	76
Harrisburg, Pa	T.	38	36	55	73	81	90	87	85	95	85	85	85	62	55	42	39	322.5	455.2	71	52
Helena, Mont	P.	75	82	87	90	94	93	87	79	88	81	87	80	75	72	67	72	394.0	479.6	82	62
Huron, S. Dak	T.	57	58	56	56	73	77	79	78	80	85	83	84	79	74	62	60	337.7	468.4	72	66
Indianapolis, Ind	T.	76	71	70	71	76	83	77	75	76	75	78	77	62	49	59	64	325.3	455.2	71	55
Jacksonville, Fla.	T.	......	62	60	69	74	81	80	77	75	62	64	51	48	25	16	18	258.9	429.6	60	45
Jupiter, Fla	T.	......	38	66	75	88	97	99	90	86	79	79	66	63	40	30	......	304.5	423.0	72	51
Kalispell, Mont	T.	28	31	55	76	86	85	87	86	85	82	71	76	67	56	31	16	312.3	483.2	65	65
Kansas City, Mo.	P.	67	65	64	65	69	72	76	74	66	75	78	82	80	72	64	63	322.3	453.0	71	61
Knoxville, Tenn	T.	61	46	52	69	85	97	96	98	88	89	83	71	63	52	45	50	324.3	444.3	73	65
Lexington, Ky	T.	27	34	72	87	91	96	99	95	94	92	89	86	31	75	47	38	358.4	450.1	80	57
Little Rock, Ark	T.	62	39	54	66	74	89	91	94	95	88	84	73	60	59	42	42	319.5	442.0	72	44
Los Angeles, Cal	P.	17	23	28	35	51	65	83	93	94	95	98	96	98	99	95	93	330.7	439.7	75	67
Louisville, Ky	T.	55	55	55	59	64	67	72	65	65	66	64	56	51	45	48	47	265.9	450.1	59	52
Macon, Ga	T.	29	27	61	79	85	89	89	90	86	85	87	80	65	47	29	27	310.3	437.2	71	49
Meridian, Miss	T.	67	27	26	30	45	55	61	62	66	56	49	49	29	16	13	20	182.0	434.5	42	37
Mount Tamalpais, Cal	P.	96	94	95	94	94	95	97	93	94	98	95	91	91	91	88	89	419.7	450.1	94	91
Nashville, Tenn	T.	48	44	70	81	84	95	90	88	81	82	83	87	78	62	46	45	337.3	444.3	76	50
New Haven, Conn	T.	68	61	68	82	89	94	94	92	91	92	99	89	81	66	60	54	373.8	458.6	82	75
New Orleans, La.	T.	......	27	23	31	42	47	48	48	41	84	32	23	28	10	7	9	135.3	429.6	31	30
New York, N. Y	T.	60	61	72	82	91	93	91	95	91	92	87	87	76	61	50	41	361.8	458.6	79	56
Norfolk, Va.*	T.	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Northfield, Vt	P.	25	33	43	51	54	50	47	55	60	62	60	65	55	49	37	36	234.4	468.4	50	33
Oklahoma, Okla	T.	38	45	52	56	63	77	84	94	90	87	85	85	85	69	65	61	325.8	442.0	74	55
Omaha, Nebr	T.	57	62	72	79	82	88	91	94	94	88	91	89	84	75	71	71	375.8	458.6	82	58
Parkersburg, W. Va	T.	51	44	62	72	84	96	92	79	84	83	85	78	69	61	37	24	324.3	453.0	72	68
Phenix, Ariz	P.	86	91	90	90	92	94	94	95	99	99	100	99	93	88	81	86	407.1	437.2	93	89
Philadelphia, Pa	T.	63	55	55	61	69	78	84	85	88	86	80	74	63	55	43	42	313.6	455.2	69	58
Pittsburg, Pa	T.	44	35	37	46	54	57	69	72	78	71	63	51	37	13	6	7	219.3	458.6	48	55
Pocatello, Idaho	T.	63	68	75	82	89	90	91	87	89	81	78	76	76	74	55	56	364.3	465.2	78	71
Portland, Me	T.	3	16	58	75	83	85	89	90	88	87	82	78	71	57	37	18	312.5	468.4	67	61
Portland, Oreg	T.	51	56	44	47	47	56	66	82	75	75	69	67	67	62	65	60	296.2	475.7	62	66
Pueblo, Colo†	T.	79	78	92	96	97	96	99	99	100	97	89	84	69	57	44	47	319.1	377.6	85	67
Raleigh, N. C	T.	61	46	48	62	73	83	87	89	91	90	90	78	69	56	85	38	313.5	444.3	71	62
Rochester, N. Y	T.	40	40	39	48	59	64	65	72	77	74	70	68	59	37	30	30	259.3	465.2	56	53
St. Louis, Mo	T.	59	58	64	71	76	82	89	95	90	85	80	83	75	59	55	54	339.8	453.0	75	60
St. Paul, Minn	P.	38	45	63	69	74	75	77	77	74	69	71	71	62	52	43	36	298.8	471.7	63	56
Salt Lake City, Utah	T.	84	85	88	91	95	96	96	98	97	100	97	96	96	95	90	87	430.5	458.6	94	89
San Diego, Cal	P.	0	13	16	27	53	81	85	90	96	95	96	92	88	79	66	64	305.9	437.2	70	71
San Francisco, Cal.	T.	55	45	46	59	78	92	97	95	99	98	96	94	89	72	61	64	357.8	450.1	79	80
Santa Fe, N. Mex.	P.	90	93	93	96	96	93	94	87	79	77	75	71	67	57	48	42	354.8	444.3	80	71
Sault Ste. Marie, Mich.	T.	25	24	40	51	58	62	64	74	77	72	72	67	57	52	47	28	264.8	475.7	56	51
Savannah, Ga.	T.	67	68	68	66	64	65	70	75	68	73	65	56	45	32	29	30	260.6	434.5	60	55
Seattle, Wash	T.	37	40	45	58	57	64	70	79	92	89	80	73	65	60	35	31	297.3	483.2	62	61
Spokane, Wash	T.	59	61	65	69	84	86	89	92	89	87	88	87	87	78	70	69	382.8	483.2	79	64
Tacoma, Wash	T.	30	39	45	52	56	71	80	89	93	95	89	85	79	68	51	27	320.9	479.6	67	64
Tampa, Fla	T.	......	75	69	83	89	91	92	87	85	71	62	45	31	17	16	......	277.8	424.9	65	47
Toledo, Ohio	T.	66	67	74	76	83	88	90	89	90	85	89	94	90	79	73	56	378.1	461.8	82	64
Topeka, Kans.	T.	57	61	62	63	72	72	80	75	80	80	77	71	67	68	66	66	320.1	453.0	71	61
Vicksburg, Miss	T.	100	44	42	51	60	87	96	95	95	85	79	70	48	37	29	40	284.8	434.5	66	30
Washington, D. C.	P.	54	54	66	72	79	83	83	85	89	91	86	88	83	72	65	68	351.6	453.0	78	66
Wilmington, N. C.	T.	50	58	68	87	91	95	95	94	83	81	78	76	69	59	53	50	340.2	439.7	77	55
Yankton, S. Dak	T.	28	45	67	73	77	79	79	81	78	83	82	82	80	69	49	32	326.6	465.2	70	58
Basseterre, St. Kitts	T.	......	34	37	45	81	94	92	95	84	88	86	81	59	35	22	......	281.9	404.2	70	49
Bridgetown, Barbados	T.	......	25	37	51	69	74	78	79	76	75	69	56	35	29	18	......	231.2	397.5	58	30
Cienfuegos, Cuba	T.	......	78	77	80	84	93	89	86	78	69	58	37	15	5	3	......	256.3	413.5	62	56
Havana, Cuba	T.	......	75	74	70	87	75	83	85	83	77	62	46	28	22	19	......	263.4	415.1	63	38
Kingston, Jamaica, W. I	T.	......	9	13	51	60	71	77	78	70	60	55	50	37	24	29	......	210.3	406.2	52	36
Port of Spain, Trinidad, W. I.	T.	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Puerto Principe, Cuba	T.	......	36	37	39	53	75	77	71	75	68	62	44	35	28	24	......	217.3	411.7	53	49
Roseau, Dominica, W. I.	T.	......	14	13	17	43	71	69	75	75	77	77	64	54	42	39	......	218.1	400.8	54	37
San Juan, Porto Rico	T	......	0	15	67	77	78	90	87	77	79	69	65	57	38	11	......	250.2	406.2	62	52
Santiago de Cuba, Cuba	T	......	90	87	79	79	82	70	71	75	77	54	88	27	24	12	......	254.0	409.9	62	38
Santo Domingo, Santo Domingo	T.	......	59	61	58	74	74	65	61	55	45	45	25	14	10	10	......	192.4	406.2	47	43
Willemstad, Curaçao	T.	......	7	6	19	43	56	68	69	69	68	73	65	44	27	26	......	192.4	395.7	49	44

* Record incomplete † Record for 26 days.

TABLE IX.—*Accumulated amounts of precipitation for each 5 minutes, for storms in which the rate of fall equaled or exceeded 0.25 in any 5 minutes, or 0.75 in 1 hour during July, 1900, at all stations furnished with self-registering gages.*

Stations.	Date.	Total duration.		Total am't of precipitation.	Excessive rate.		Amount before excessive began.	Depths of precipitation (in inches) during periods of time indicated.													
		From—	To—		Began—	Ended—		5 min.	10 min.	15 min.	20 min.	25 min.	30 min.	35 min.	40 min.	45 min.	50 min.	60 min.	80 min.	100 min.	120 min.
	1	2	3	4	5	6	7														
Albany, N. Y.	12	12.26 p.m.	3.15 p.m.	1.38	1.51 p.m.	2.41 p.m.	0.50	0.27	0.33	0.43	0.47	0.55	0.55	0.58	0.67	0.80	0.86				
Do	26	4.45 p.m.	5.50 p.m.	0.72	4.47 p.m.	5.02 p.m.	0.01	0.26	0.53	0.60											
Atlanta, Ga.	1-2	7.15 p.m.	12.30 a.m.	0.94	8.25 p.m.	8.40 p.m.	0.09	0.16	0.38	0.47	0.51										
Do	29	6.25 a.m.	1.45 p.m.	2.07	12.34 p.m.	12.59 p.m.	1.43	0.06	0.18	0.33	0.48	0.54									
Atlantic City, N. J.	3-4	8.20 p.m.	12.10 a.m.	0.92	10.54 p.m.	11.09 p.m.	0.28	0.26	0.55	0.59	0.60	0.61	0.61	0.63	0.64						
Do	18	6.52 p.m.	7.50 p.m.	1.18	7.03 p.m.	7.42 p.m.	0.01	0.10	0.44	0.76	0.96	1.00	1.01	1.13	1.17						
Baltimore, Md.	30			0.37												0.34					
Binghamton, N. Y.	15			0.40														0.33			
Bismarck, N. Dak.	3			0.36														0.22			
Boise, Idaho	4			0.01									0.01								
Boston, Mass.	25	5.30 p.m.	8.15 p.m.	0.50	5.32 p.m.	5.42 p.m.	T.	0.30	0.35	0.36											
Buffalo, N. Y.	18			0.81														0.55			
Cairo, Ill.	20			0.82														0.75			
Charleston, S. C.	28			0.72														0.52			
Chicago, Ill.	2	9.45 p.m.	D. N.	1.06	9.54 p.m.	10.08 p.m.	0.01	0.22	0.36	0.42	0.44	0.51	0.60	0.65	0.70	0.71	0.74	0.76			
Cincinnati, Ohio	17			0.75														0.58			
Cleveland, Ohio	11	3.00 p.m.	4.30 p.m.	0.93	3.32 p.m.	3.57 p.m.	0.01	0.25	0.40	0.58	0.74	0.86	0.89	0.89	0.91	0.92					
Columbia, Mo.	24			0.73														0.67			
Columbus, Ohio	19	11.52 a.m.	1.18 p.m.	1.27	12.22 p.m.	1.02 p.m.	T.	0.10	0.31	0.66	0.75	0.85	1.08	1.20	1.27						
Denver, Colo.	5	12.45 a.m.	3.35 a.m.	1.04	1.29 a.m.	1.49 a.m.	0.05	0.08	0.33	0.55	0.68	0.75	0.78	0.81	0.83	0.84	0.84	0.86	0.92	0.96	
Des Moines, Iowa	23	5.05 p.m.	9.20 p.m.	1.67	5.15 p.m.	*6.05 p.m.	T.	0.30	0.50	0.70	0.77	0.84	0.90	0.92	0.96	1.01					
Detroit, Mich.	20	3.17 p.m.	3.45 p.m.	0.48	3.17 p.m.	3.32 p.m.	0.00	0.20	0.37	0.46											
Dodge, Kans	28	6.35 p.m.	10.10 p.m.	1.56	6.35 p.m.	7.21 p.m.	0.00	0.13	0.35	0.60	0.67	0.77	0.87	0.95	1.05	1.13	1.19	1.27	1.37	1.39	
Duluth, Minn.	5	3.35 p.m.	6.00 p.m.	0.72	5.03 p.m.	5.12 p.m.	0.25	0.30	0.41												
Eastport, Me.	17			0.39														0.37			
Elkins, W. Va	19	3.25 p.m.	4.15 p.m.	0.58	3.33 p.m.	3.56 p.m.	0.01	0.16	0.26	0.44	0.50	0.57									
		5.35 p.m.	8.30 p.m.	0.75	7.22 p.m.	7.36 p.m.	0.04	0.44	0.63	0.65	0.66	0.68									
Erie, Pa.	5	D. N.	D. N.	0.69	2.26 a.m.	2.41 a.m.	0.09	0.27	0.37	0.57	0.57	0.58									
Do	7	9.35 p.m.	D. N.	0.91	10.05 p.m.	10.35 p.m.	0.05	0.13	0.32	0.39	0.46	0.55	0.61	0.68							
Escanaba, Mich.	15			1.11														0.39			
Evansville, Ind	18-19	11.05 p.m.	D. N.	1.27	1.52 a.m.	2.27 a.m.	0.28	0.11	0.22	0.24	0.27	0.32	0.68	0.96	0.99						
Fort Worth, Tex.	17	6.00 a.m.	10.00 a.m.	1.80	7.17 a.m.	8.47 a.m.	0.02	0.07	0.23	0.44	0.59	0.69	0.84	0.93	0.99	1.04	1.10	1.30	1.51	1.68	1.74
Do	25	5.40 a.m.	9.40 a.m.	1.50	6.35 a.m.	7.10 a.m.	0.26	0.08	0.20	0.30	0.37	0.46	0.58	0.63	0.66	0.69	0.72	0.78	0.85	1.03	1.19
Fresno, Cal.	20			T.				T.													
Galveston, Tex.					*a*	*a*	0.32	0.36	0.57	0.83	1.10	1.46	1.90	2.21	2.51	2.70	2.79	3.10	3.35	3.40	
Do					*b*	*b*	3.77	0.11	0.30	0.43	0.75	0.87	0.99	1.04	1.04	1.04	1.12	1.58	2.69	2.93	
Do	12-14	†	†	14.78	*c*	*c*	7.03	0.22	0.61	0.82	0.88	0.94	0.98								
Do					*d*	*d*	8.20	0.10	0.28	0.49	0.65	0.69	0.74	0.87	0.97	1.10	1.15	1.16			
Do					*e*	*e*	10.20	0.12	0.16	0.22	0.34	0.50	0.69	0.81	0.89	0.94	1.04	1.23	1.72	2.40	2.58
Grand Junction, Colo.	22			0.09									0.09								
Harrisburg, Pa	25	1.05 p.m.	1.59 p.m.	0.64	1.33 p.m.	1.54 p.m.	0.01	0.06	0.24	0.52	0.62	0.63									
Hatteras, N. C.	28	1.35 a.m.	6.30 a.m.	3.38	4.40 a.m.	6.15 a.m.	0.26	0.11	0.32	0.54	0.80	1.07	1.24	1.51	1.63	1.83	2.03	2.29	2.94	3.12	
Huron, S. Dak.	14	2.30 a.m.	4.20 a.m.	1.68	3.05 a.m.	4.05 a.m.	0.05	0.08	0.16	0.27	0.46	0.68	0.81	0.86	0.91	1.01	1.11	1.31	1.61		
Indianapolis, Ind.	24	2.00 p.m.	3.43 p.m.	0.89	2.05 p.m.	2.20 p.m.	0.04	0.16	0.52	0.73	0.76										
Jacksonville, Fla.	8-9	9.00 p.m.	12.30 a.m.	0.71	10.30 p.m.	10.50 p.m.	0.05	0.22	0.41	0.58	0.61	0.64									
Do	27	4.50 p.m.	9.20 p.m.	0.96	4.58 p.m.	5.18 p.m.	T.	0.17	0.43	0.59	0.69	0.73									
Do	30	3.23 p.m.	6.20 p.m.	0.80	3.24 p.m.	3.35 p.m.	T.	0.36	0.68	0.73											
Jupiter, Fla.	15-16	4.08 p.m.	6.00 a.m.	2.06	4.30 p.m.	5.00 p.m.	0.05	0.15	0.42	0.63	0.73	0.86	0.91	0.93	0.97	0.99	1.04	1.16	1.27		
Kalispell, Mont	4			0.21									0.21								
Kansas City, Mo.	23-24			2.18														0.68			
Key West, Fla.	23			2.06														0.61			
Knoxville, Tenn	29	4.15 p.m.	7.40 p.m.	0.96	4.27 p.m.	4.50 p.m.	T.	0.13	0.35	0.56	0.64	0.71									
Lexington, Ky.	19	2.05 p.m.	3.52 p.m.	0.77	2.10 p.m.	2.50 p.m.	T.	0.05	0.11	0.16	0.23	0.30	0.48	0.66	0.71	0.74					
Lincoln, Nebr.	15-16	6.23 p.m.	7.40 a.m.	3.11	7.00 p.m.	8.05 p.m.	0.05	0.07	0.22	0.37	0.77	1.12	1.27	1.33	1.44	1.52	1.72	2.19	2.37		
Do	19	3.28 p.m.	4.55 p.m.	0.90	3.40 p.m.	4.05 p.m.	T.	0.06	0.29	0.54	0.71	0.78	0.80								
Do	23	10.10 a.m.	2.45 p.m.	0.67	1.00 p.m.	1.20 p.m.	0.07	0.13	0.31	0.41	0.56	0.58									
Little Rock, Ark.	22	2.30 p.m.	3.05 p.m.	0.50	2.41 p.m.	2.55 p.m.	T.	0.22	0.40	0.50											
Do	29	3.30 p.m.	5.00 p.m.	1.32	3.40 p.m.	4.20 p.m.	0.04	0.31	0.57	0.76	0.89	0.98	1.08	1.15	1.20	1.24					
Los Angeles, Cal.	20			T.														T.			
Louisville, Ky.	24	9.55 p.m.	D. N.	0.55	10.00 p.m.	10.15 p.m.	0.01	0.07	0.34	0.49	0.52										
Macon, Ga.	1			0.77														0.56			
Memphis, Tenn.	13	6.27 p.m.	6.55 p.m.	0.58	6.27 p.m.	6.45 p.m.	0.00	0.10	0.32	0.53	0.57	0.58									
Do	25	7.42 p.m.	9.15 p.m.	1.12	7.50 p.m.	8.10 p.m.	T	0.41	0.73	0.96	1.03	1.04									
Meridian, Miss.	27	3.50 p.m.	7.00 p.m.	1.04	3.50 p.m.	4.20 p.m.	0.00	0.20	0.41	0.52	0.65	0.82	0.88	0.89							
Milwaukee, Wis.	6	7.43 p.m.	10.00 p.m.	1.27	7.43 p.m.	8.20 p.m.	0.00	0.22	0.30	0.40	0.65	0.85	0.98	1.13	1.17	1.20					
Montgomery, Ala	11	1.12 p.m.	2.45 p.m.	1.43	1.18 p.m.	2.10 p.m.	0.01	0.12	0.37	0.60	0.82	0.91	1.00	1.06	1.16	1.26	1.34	1.39	1.42		
Do	30	1.37 p.m.	2.12 p.m.	0.87	1.38 p.m.	1.51 p.m.	T.	0.45	0.75	0.87											
Nantucket, Mass.	3-4	9.38 p.m.	1.45 a.m.	0.54	11.55 p.m.	12.10 a.m.	T.	0.10	0.27	0.50	0.54										
Nashville, Tenn.	3	5.25 p.m.	6.15 p.m.	0.72	5.26 p.m.	5.38 p.m.	T.	0.40	0.68	0.72											
New Orleans, La.	17	4.48 p.m.	5.20 p.m.	0.79	4.50 p.m.	5.10 p.m.	0.02	0.20	0.40	0.66	0.77										
Do	18	12.45 p.m.	2.40 p.m.	1.12	12.45 p.m.	1.25 p.m.	0.00	0.23	0.50	0.67	0.81	0.88	1.00	1.06	1.10						
Do	22	1.40 p.m.	4.35 p.m.	1.00	2.05 p.m.	2.35 p.m.	T.	0.18	0.29	0.55	0.77	0.85	0.91	0.91	0.93	0.97					
New York, N. Y.	26			1.18														0.65			
Norfolk, Va.	4	8.03 p.m.	9.00 p.m.	1.72	8.03 p.m.	8.40 p.m.	0.00	0.09	0.25	0.57	0.87	1.27	1.54	1.67	1.72						
Do	22	1.50 p.m.	7.35 p.m.	1.56	2.00 p.m.	2.40 p.m.	0.05	0.07	0.22	0.41	0.66	1.03	1.19	1.28	1.37	1.39					
Do	26-27	3.00 p.m.	5.15 a.m.	2.40	3.00 p.m.	3.30 p.m.	0.00	0.30	0.59	0.76	0.79	0.84	0.91								
Northfield, Vt.	25			1.14														0.52			
Oklahoma, Okla.	4	1.40 p.m.	5.00 p.m.	1.32	1.40 p.m.	2.35 p.m.	0.00	0.13	0.33	0.36	0.47	0.51	0.54	0.62	0.74	0.86	1.07	1.17	1.25		
Do	16	3.50 p.m.	6.48 p.m.	1.39	5.09 p.m.	‡	0.19	0.10	0.37	0.61	0.72	‡									
Do	24	2.44 p.m.	3.35 p.m.	0.73	3.03 p.m.	3.13 p.m.	0.13	0.25	0.59	0.60											
Omaha, Nebr.	15	4.10 p.m.	6.30 p.m.	1.28	4.50 p.m.	5.35 p.m.	T.	0.13	0.29	0.63	0.78	0.85	0.94	1.06	1.17	1.28					
Do	15-16	8.20 p.m.	8.10 a.m.	2.08	8.27 p.m.	9.00 p.m.	T.	0.18	0.30	0.42	0.54	0.73	0.90	1.05	1.07	1.12	1.15	1.17			
Parkersburg, W. Va.	19	2.12 p.m.	2.30 p.m.	0.62	2.15 p.m.	2.26 p.m.	T.	0.15	0.60	0.62											
		3.14 p.m.	4.00 p.m.	0.95	3.18 p.m.	3.42 p.m.	T.	0.18	0.55	0.75	0.87	0.95									
		4.30 p.m.	5.30 p.m.	0.65	4.54 p.m.	5.08 p.m.	0.01	0.35	0.49	0.59	0.61	0.68									
Do	22	7.30 p.m.	11.10 p.m.	1.23	7.34 p.m.	8.20 p.m.	T.	0.16	0.37	0.54	0.61	0.68	0.77	0.85	0.89	0.94	0.97	1.00			
Philadelphia, Pa.	12			0.48														0.47			
Pittsburg, Pa.	19	2.05 p.m.	6.15 p.m.	1.06	3.10 p.m.	3.35 p.m.	T.	0.10	0.27	0.50	0.67	0.72	0.76	0.79							
Pocatello, Idaho	26			0.01														0.01			
Portland, Me.	25			0.84														0.78			
Portland, Oreg.	4			0.15												0.15					
Pueblo, Colo.	25	6.40 p.m.	7.20 p.m.	0.56	6.45 p.m.	7.00 p.m.	0.02	0.15	0.37	0.52	0.54										
Raleigh, N. C.	26-27	7.55 p.m.	D. N.	2.29	7.55 p.m.	8.35 p.m.	0.00	0.18	0.40	0.73	1.07	1.51	1.75	1.89	1.96	1.98					
Richmond, Va.	26	2.34 p.m.	3.42 p.m.	1.28	2.45 a.m.	3.15 p.m.	0.03	0.12	0.26	0.56	0.90	1.07	1.22	1.24							
Rochester, N. Y.	15			0.58														0.31			
St. Louis, Mo.	24	2.42 p.m.	5.30 p.m.	1.62	2.45 p.m.	3.20 p.m.	0.01	0.08	0.69	0.94	1.07	1.15	1.21	1.25							
St. Paul, Minn.	2	8.45 a.m.	2.02 p.m.	1.21	11.18 a.m.	11.50 a.m.	0.11	0.16	0.26	0.29	0.38	0.43	0.47	0.50							
					1.45 p.m.	1.50 p.m.	0.61	0.59	0.60												
Salt Lake City, Utah	3			0.26														0.14			
San Diego, Cal.				0.00														0.00			

TABLE IX.—*Accumulated amounts of precipitation for each 5 minutes, etc.*—Continued.

Stations.	Date.	Total duration. From—	Total duration. To—	Total am't of precipitation.	Excessive rate. Began—	Excessive rate. Ended—	Amount before excessive began.	Depths of precipitation (in inches) during periods of time as indicated. 5 min.	10 min.	15 min.	20 min.	25 min.	30 min.	35 min.	40 min.	45 min.	50 min.	60 min.	80 min.	100 min.	120 min.
	1	2	3	4	5	6	7														
Sandusky, Ohio	5	5.55 p.m.	7.35 p.m.	1.24	6.00 p.m.	6.50 p.m.	0.04	0.16	0.30	0.44	0.64	0.68	0.69	0.72	0.74	0.93	1.15	1.19			
Do	7-8	7.59 p.m.	1.50 a.m.	1.86	7.59 p.m.	8 45 p.m.	0.00	0.36	0.48	0.54	0.62	0.68	0.74	0.93	1.10	1.26	1.33	1.37			
Do	29-30	11.27 p.m.	12.10 a.m.	0.71	11.30 p.m.	11.50 p.m.	0.02	0.14	0.49	0.59	0.64	0.67									
San Francisco, Cal.	20			T.																	
Savannah, Ga.	29	4.50 p.m.	7.45 p.m.	0.61	4.53 p.m.	5.08 p.m.	T.	0.21	0.34	0.44	0.46	0.49									
Seattle, Wash.	6			0.26														0.13			
Spokane, Wash.	4-5			0.33														0.28			
Tampa, Fla.	14	5.51 p.m.	8.20 p.m.	0.90	6.05 p.m.	6.45 p.m.	0.10	0.20	0.38	0.52	0.59	0.64	0.68	0.72	0.76						
Do	31	7.55 a.m.	9.31 a.m.	0.97	9.05 a.m.	9.20 a.m.	0.20	0.17	0.60	0.77											
Do	31	9.55 p.m.	D. N.	1.75	10.35 p.m.	11.15 p.m.	0.33	0.15	0.37	0.54	0.59	0.64	0.72	1.02	1.18	1.21	1.26	1.37			
Toledo, Ohio	7	6.50 p.m.	11.00 p.m.	1.75	6.52 p.m.	7.40 p.m.	T.	0.29	0.39	0.57	0.68	0.80	0.92	1.05	1.12	1.25	1.33				
Topeka, Kans.	1	2.52 a.m.	5.50 a.m.	1.19	2.52 a.m.	3.15 a.m.	0.00	0.20	0.37	0.53	0.65	0.71	0.72								
Vicksburg, Miss.	27	2.58 p.m.	3.52 p.m.	0.88	3.00 p.m.	3.35 p.m.	0.01	0.07	0.28	0.45	0.65	0.72	0.75	0.80	0.83						
Do	28	5.12 p.m.	6.13 p.m.	1.63	5.20 p.m.	5.45 p.m.	0.03	0.11	0.56	1.14	1.47	1.57	1.59								
Washington, D. C.	19			0.54														0.25			
Wilmington, N. C.	27			0.33														0.29			
					6.53 p.m.	8.00 p.m.	0.00	0.20	0.47	0.79	1.01	1.16	1.19	1.21	1.24	1.29	1.48	1.87			
Yankton, S. Dak	14-15	6.53 p.m.	1.00 p.m.	7.26	1.15 a.m.	2.15 a.m.	2.39	0.17	0.35	0.49	0.65	0.75	0.81	0.92	0.96	0.99	1.07	1.43	1.49	1.80	1.89
					3.40 a.m.	4.20 a.m.	4.32	0.05	0.21	0.67	0.98	1.17	1.28	1.33	1.39	1.43	1.44				
Basseterre, St. Kitts.	30			0.59											0.59						
Bridgetown, Barbados	28			0.69														0.52			
Cienfuegos, Cuba	19	1.30 p.m.	3.20 p.m.	1.01	1.31 p.m.	2.10 p.m.	T.	0.11	0.19	0.27	0.40	0.63	0.81	0.90	0.97						
Do	24	5.00 p.m.	7.55 p.m.	0.75	5.10 p.m.	5.35 p.m.	0.02	0.05	0.21	0.41	0.50	0.55	0.58								
Do	29	3.20 p.m.	4.00 p.m.	0.74	3 22 p.m.	3.52 p.m.	T.	0.06	0.18	0.36	0.49	0.64	0.73								
Havana, Cuba	10	5.08 p.m.	D. N.	0.88	5.12 p.m.	5.35 p.m.	T.	0.18	0.45	0.61	0.73	0.78	0.81								
Do	27	3.30 p.m.	5.30 p.m.	1.75	3.40 p.m.	4.30 p.m.	0.02	0.10	0.24	0.51	0.90	1.23	1.40	1.52	1.57	1.62	1.67	1.70			
Kingston, Jamaica	24	1.28 p.m.	2.40 p.m.	1.12	2.00 p.m.	2.20 p.m.	0.02	0.12	0.48	0.98	1.09	1.10									
Port of Spain, Trin.	9	1.25 p.m.	2.15 p.m.	0.65	1.25 p.m.	1.45 p.m.	0.00	0.12	0.29	0.48	0.58										
Do	23	10.05 a.m.	10.30 a.m.	0.67	10.07 a.m.	10.24 a.m.	T.	0.07	0.29	0.61	0.66										
Do	27	10.05 a.m.	10.45 a.m.	0.63	10.05 a.m.	10.20 a.m.	0.00	0.10	0.44	0.62	0.63										
Puerto Principe, Cuba	9	3.55 p.m.	8.40 p.m.	2.55	3.57 p.m.	4.35 p.m.	0.01	0.39	0.73	1.03	1.46	1.80	2.09	2.24							
Roseau, Dominica	18	12.24 p.m.	1.35 p.m.	0.74	12.38 p.m.	12.58 p.m.	0.04	0.29	0.47	0.59	0.67										
San Juan, Porto Rico.	22-23	10.08 p.m.	1.30 a.m.	1.08	11.35 p.m	11.50 p.m.	0.22	0.29	0.62	0.77	0.80	0.82									
Santiago de Cuba	20			0.37							0.34										
Santo Domingo, S. D.	12	11.15 a.m.	12.10 p.m.	0.87	11.20 a.m.	11.45 a.m.	0.03	0.11	0.22	0.49	0.63	0.69	0.70	0.71	0.82						
Do	18	1.45 p.m.	2.45 p.m.	0.98	2.00 p.m.	2.14 p.m.	T.	0.42	0.85	0.98											
Do	23	10.25 a.m.	4 45 p.m.	0.86	1.50 p.m.	2.05 p.m.	0.09	0.21	0.35	0.42	0.44	0.47	0.50	0.53	0.58	0.60					
Willemstad, Curaçao	6			0.21								0.21									

* Instrument failed to record properly after 6:05 p. m. † 8:58 p. m. of 12th to about 5 a. m. of 14th. *a* 3 a. m to 4 a. m. of 13th; *b* 5:25 a. m to 7 a. m. of 13th; *c* 8:15 a. m. to 8:40 a. m. of 13th; *d* 11:05 a. m, to 11:55 a. m. of 13th; *e* 1:45 p. m. to 3:30 p. m. of 13th. ‡ Self register out of order after 5:30 p. m.

TABLE X.—*Data furnished by the Canadian Meteorological Service, July, 1900*

Stations.	Pressure.			Temperature.				Precipitation.		
	Mean not reduced.	Mean reduced.	Departure from normal.	Mean.	Departure from normal.	Mean maximum.	Mean minimum.	Total.	Departure from normal.	Depth of snow.
	Ins.	*Ins.*	*Ins.*	°	°	°	°	*Ins.*	*Ins.*	*Ins.*
St. Johns, N. F	29.69	29.83	—.15	57.2	— 2.1	64.9	49.4	3.81	—0.15	
Sydney, C. B. I	29.86	29.90	—.01	62.5	+ 0.2	71.2	53.8	2.14	—3.36	
Halifax, N. S	29.81	29.92	.00	64.5	+ 1.1	74.9	55.0	1.89	—2.36	
Grand Manan, N. B	29.85	29.90	—.05	63.7	+ 2.0	72.1	55.4	0.73	—3.11	
Yarmouth, N. S	29.87	29.95	+.02	61.6	+ 2.1	69.4	53.8	2.65	—0.42	
Charlottet'n, P. E. I	29.83	29.87	—.05	66.1	+ 2.0	75.0	57.1	1.04	—2.93	
Chatham, N. B	29.83	29.85	—.03	64.9	— 0.1	74.7	55.1	2.42	—2.28	
Father Point, Que	29.80	29.83	—.02	55.3	— 2.3	64.3	46.3	4.57	+1.35	
Quebec, Que	29.54	29.86	—.01	65.0	— 0.5	74.2	55.9	7.12	+3.16	
Montreal, Que	......	......	......	......	......	.....	.....	.....	......	....
Bissett, Ont	......	......	.....	......	......	.....	......	.....	......	...
Ottawa, Ont	29.54	29.86	—.03	69.0	— 0.5	78.0	59.9	5.99	......	
Kingston, Ont	29.62	29.93	+.03	67.5	— 0.7	75.8	59.3	2.21	—1.05	
Toronto, Ont	29.56	29.94	.00	69.5	+ 1.5	80.9	58.0	2.72	—0.25	
White River, Ont	28.59	29.91	—.05	59.2	— 0.3	72.0	46.4	3.67	+0.36	
Port Stanley, Ont	29.34	29.96	.00	67.9	+ 0.1	78.0	57.8	4.40	+0.85	
Saugeen, Ont	29.23	29.93	.00	66.2	+ 1.5	75.1	57.3	1.83	—0.20	
Parry Sound, Ont	29.23	29.91	—.01	65.8	— 0.2	75.3	56.2	2.81	+0.38	....
Port Arthur, Ont	29.18	29.86	—.03	61.9	— 0.1	72.7	51.0	3.33	+0.32	....
Winnipeg, Man	29.08	29.88	—.02	64.9	— 1.1	78.0	51.7	4.06	+0.84	....
Minnedosa, Man	28.10	29.85	.00	63.4	+ 1.2	75.3	51.5	4.21	+1.67	....
Qu'Appelle, Assin	27.64	29.82	—.05	63.8	+ 0.3	77.7	49.9	2.11	—0.34	....
Medicine Hat, Assin.	27.61	29.82	—.03	69.0	+ 1.2	85.3	52.7	2.67	+0.95	....
Swift Current, Assin.	27.35	29.84	—.07	66.6	+ 0.1	81.0	52.1	2.42	+0.30	....
Calgary, Alberta	27.38	29.88	—.03	58.2	— 2.4	71.9	44.5	2.02	—0.56	....
Banff, Alberta	25.35	29.89	......	55.9	— 0.7	70.0	41.8	2.51	—0.78	...
Edmonton, Alberta	27.56	29.80	—.11	59.4	— 1.2	71.7	47.2	3.91	+0.81	....
Prince Albert, Sask	28.29	29.79	......	60.1	— 1.8	70.9	49.2	3.76	+2.05	....
Battleford, Sask	28.14	29.84	......	62.8	— 1.9	74.7	51.0	4.21	+1.93	....
Kamloops, B. C	28.68	29.92	....	67.2	— 1.3	78.2	56.2	1.78	+0.73	....
Victoria, B. C	29.90	29.99	......	60.1	+ 0.1	67.3	52.9	0.40	......	....
Barkerville, N. W. T.	25.66	29.87	......	55.4	+ 0.3	67.8	43.1	2.78	......	...
Hamilton, Bermuda.	29.99	30.15	+.04	79.4	+ 1.0	85.6	73.1	2.38	—2.40	....

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TABLE XI.—*Heights of rivers referred to zeros of gages, July, 1900.*

Stations.	Distance to mouth of river.	Danger line on gage.	Highest water.		Lowest water.		Mean stage.	Monthly range.
			Height.	Date.	Height.	Date.		
Mississippi River.	*Miles.*	*Feet.*	*Feet.*		*Feet.*		*Feet.*	*Feet.*
St. Paul, Minn	1,954	14	3.0	8, 13, 14	0.7	2	2.2	2.3
Reeds Landing, Minn	1,884	12	3.0	16, 17	0.1	1-4	2.1	2.9
La Crosse, Wis	1,819	12	4.9	18, 22	1.2	2,3	3.5	3.7
Prairie du Chien	1,759	18	5.6	25, 26	1.2	2,3	3 5	4.4
Dubuque, Iowa	1,699	15	5.8	21	1.4	1,2	3.6	4.4
Leclaire, Iowa	1,609	10	4.0	25, 26	0.6	1-3	2.4	3 4
Davenport, Iowa	1,598	15	4.8	26	1.2	2	3 0	3.6
Muscatine, Iowa	1,562	16	6.0	26	1.8	2	3.8	4.2
Galland, Iowa	1,472	8	2.9	25	0.8	4, 5, 10	1.7	2.1
Keokuk, Iowa	1,463	15	4.9	28	0.8	10	2.5	4.1
Hannibal, Mo	1,402	13	5.8	29, 30	1.8	11-13	3.4	4.0
Grafton, Ill	1,306	23	7.4	30, 31	3.9	14-16	5.1	3.5
St. Louis, Mo	1,264	30	13.1	26	9.1	20, 21	11.0	4.0
Chester, Ill	1,189	36	10.4	27	7.0	20, 21	8.5	3.4
Memphis, Tenn	843	33	23.6	3, 4	6.7	25	13.3	16.9
Helena, Ark	767	42	32.3	5	12 1	25, 26	20.8	20.2
Arkansas City, Ark	635	42	33.3	6, 7	13.7	25	23.3	19.6
Greenville, Miss	595	42	28.1	7	11.3	25, 26	19.5	16.8
Vicksburg, Miss	474	45	32.5	9	13.8	27-30	24.0	18.7
New Orleans, La	108	16	11.8	11	5.4	31	9.4	6.4
Missouri River.								
Bismarck, N. Dak.	1,309	14	6.8	1	2.3	31	4.2	4.5
Pierre, S. Dak.	1,114	14	7.6	4	3.1	31	5.4	4.5
Sioux City, Iowa	784	19	11.2	16	6.5	31	9.3	4 7
Omaha, Nebr	669	18	10.5	10, 17, 19	8.3	31	9.6	2.2
Plattsmouth, Nebr	641	17	7.0	17	4.9	31	6.1	2.1
St. Joseph, Mo	481	10	6.4	20	4.3	31	5 2	2.1
Kansas City, Mo	388	21	15.4	20	11.1	31	13.0	4.3
Boonville, Mo	199	20	12.6	21	9.4	18	11.0	3.2
Hermann, Mo	103	24	12.2	23	9.5	19, 31	11.1	2.7
Illinois River.								
Peoria, Ill	135	14	7.3	1	6.3	16	6.7	1.0
Youghiogheny River.								
Confluence, Pa	59	10	4.1	30	0.8	17-19	1.9	3.9
West Newton, Pa	15	23	3.6	31	0.2	18, 19	1.1	3.4
Allegheny River.								
Warren, Pa	177	14	0.6	13	0.1	28-31	0.2	0.5
Oil City, Pa	123	13	2.3	13	0.4	5,6	0.9	1.9
Parker, Pa	73	20	2.8	13	0.2	4-6	1.0	2.6
Monongahela River.								
Weston, W. Va.	161	18	2.0	1	− 0.8	25	0.1	2.8
Fairmont, W. Va.	119	25	3.0	28	0.2	15-19, 25	1.0	2.8
Greensboro, Pa.	81	18	10.6	28	6.5	18, 19	7.8	4.1
Lock No. 4, Pa.	40	28	12.0	28	5.7	18, 19	7.6	6.3
Conemaugh River.								
Johnstown, Pa.	64	7	3.0	8	1.8	23-25	2.3	1.2
Red Bank Creek.								
Brookville, Pa	35	8	2.7	12	0.2	6-8, 16, 19-24, 29-31	0.5	2.5
Beaver River.								
Ellwood Junction, Pa	10	14	5.2	12	2.0	1-4	2.9	3.2
Great Kanawha River.								
Charleston, W. Va.	61	30	8.4	27	3.6	10	6.1	4.8
New River.								
Hinton, W. Va.	95	14	3.4	28	1.2	19, 20	1.8	2.2
Cheat River.								
Rowlesburg, W. Va.	36	14	6.0	27, 30	1.2	19	2.8	4.8
Ohio River.								
Pittsburg, Pa	966	22	7.5	31	4.2	10, 30	6.0	3.3
Davis Island Dam, Pa	960	25	6.5	28	3.1	19	4.4	3.4
Wheeling, W. Va.	875	36	8.3	13	2.7	19	5.2	5.6
Parkersburg, W. Va.	785	36	8.9	30	4.6	19	6.3	4.3
Point Pleasant, W. Va	703	39	8.3	30	3.6	20	5.4	4.7
Huntington, W. Va.	660	50	12.1	31	6.7	20, 25	8.7	5.4
Catlettsburg, Ky	651	50	11.9	31	4.6	11	7.3	7.3
Portsmouth, Ohio	612	50	12.2	31	6.2	10	8.3	6.0
Cincinnati, Ohio	499	50	13.3	31	7.4	12	9.5	5.9
Madison, Ind	413	46	12.8	31	7.0	13, 14	8.7	5.8
Louisville, Ky	367	28	7.5	31	4.2	14, 15	5.2	3.3
Evansville, Ind	184	35	10.7	1	5.1	18	7.3	5.6
Paducah, Ky	47	40	26.2	1	5.5	21	11.5	20.7
Cairo, Ill	1,073	45	31.4	1, 2	12.5	22	18.9	18.9
Muskingum River.								
Zanesville, Ohio	70	20	8.0	28	5.8	2-6	6.4	2.2
Scioto River.								
Columbus, Ohio	110	17	2.1	25	1.9	6-24, 28-30	1.9	0.2
Miami River.								
Dayton, Ohio	69	18	1.8	1	0.9	14, 15, 17	1.1	0.9
Wabash River.								
Mount Carmel, Ill	50	15	13.4	2	3.5	18	6.4	9.9
Licking River.								
Falmouth, Ky	30	25	6.5	28	0.7	21, 22	1.8	5.8
Clinch River.								
Speers Ferry, Va	156	20	1.0	27	− 0.5	17, 19	0.0	1.5
Clinton, Tenn	46	25	8.3	28	2.8	19-21	4.2	5.5
Tennessee River.								
Knoxville, Tenn	614	29	6.0	28	0.9	21	2.2	5.1
Kingston, Tenn	534	25	5.5	28, 29	1.4	23	2.8	4.1
Chattanooga, Tenn	430	33	8.9	1	2.5	22, 23	4.8	6.4
Bridgeport, Ala*	390	24	6.9	2	0.9	24	3.3	6 0
Florence, Ala	220	16	9.5	1	1.7	25, 26	3.9	7.8
Riverton, Ala	190	25	16.9	1	1.7	26	5.3	15.2
Johnsonville, Tenn	94	21	28.6	1	3.7	25	8.7	24.9
Cumberland River.	*Miles.*	*Feet.*	*Feet.*		*Feet.*		*Feet.*	*Feet.*
Burnside, Ky	434	50	20.0	27	0.8	23	4.4	19.2
Carthage, Tenn	257	40	14.8	1, 30	1.9	20, 22	5.5	12.9
Nashville, Tenn	175	40	22.2	1	3.3	20, 21	8.3	18.9
Arkansas River.								
Wichita, Kans	726	10	4.2	1	1.9	31	2.7	2.3
Webbers Falls, Ind. T.	413	23	11.0	5	2.8	14, 15, 17, 18	4.9	8.2
Fort Smith, Ark	351	22	11.2	5	3.6	16	5.9	7.6
Dardanelle, Ark	256	21	11.8	7	3.0	14, 15	5.3	8.8
Little Rock, Ark	176	23	11.0	8	4.2	17	6 2	6.8
White River.								
Newport, Ark	150	26	5.0	1	2.3	18	3.3	2.7
Yazoo River.								
Yazoo City, Miss	80	25	22.3	20	19.0	31	21.3	3.3
Red River.								
Arthur City, Tex	688	27	13 0	25	5.7	8, 9	8.5	7.3
Fulton, Ark	565	28	14.6	28	6.3	13	9.9	8.3
Shreveport, La	449	29	9.6	30	3.7	17	6.5	5 9
Alexandria, La	139	33	8.4	1	3.9	19, 20	6.1	4.5
Ouachita River.								
Camden, Ark	340	39	15.5	1	5.1	18	8.4	10.4
Monroe, La	100	40	23.8	4, 5	7.1	31	15.3	16.7
Atchafalaya River.								
Melville, La	100	31	27.9	11	18.6	31	24.7	9.3
Susquehanna River.								
Wilkesbarre, Pa.	178	14	1.2	26	− 1.2	16, 20	−0.2	2.4
Harrisburg, Pa.	70	17	1.5	27	0.8	21-26	1.1	0.7
W. Br. of Susquehanna.								
Williamsport, Pa	35	20	1.7	14	0.5	26	0.9	1.2
Juniata River.								
Huntingdon, Pa	80	24	2.9	1-31	2.9	1-31	2.9	0.0
Potomac River.								
Harpers Ferry, W. Va.	170	16	2.2	1, 26, 27	1.0	18, 19	1.6	1.2
James River.								
Lynchburg, Va	257	18	1.6	26	0.0	21, 22	0.6	1.6
Richmond, Va.	110	12	1.0	29	− 1.2	1, 2, 5-7, 12-28	−1.0	2 2
Roanoke River.								
Weldon, N. C.	90	40	13.9	29	7.4	21-23	8.7	6.5
Cape Fear River.								
Fayetteville, N. C.	100	38	12.0	28	0.9	24	3.4	11.1
Lumber River.								
Fairbluff, N. C.	10	6	2.9	1	− 0.7	28, 29	0.6	3.6
Edisto River.								
Edisto, S. C.	75	6	5.0	1	1.5	26-28	2.6	3.5
Pedee River.								
Cheraw, S. C.	145	27	6.6	28	1.1	22, 23	2.5	5.5
Black River.								
Kingstree, S. C	60	12	7.5	1	0.5	24-28	3.0	7.0
Lynch Creek.								
Effingham, S. C.	35	12	8.2	2, 3	2.5	23, 24	4.0	5.7
Santee River.								
St. Stephens, S. C.	50	12	9.3	4	2.3	24	6.1	7.0
Congaree River.								
Columbia, S. C.	37	15	2.3	1	0.3	26	0.9	2.0
Wateree River.								
Camden, S. C.	45	24	10.0	31	3.5	23	5.9	6.5
Waccamaw River.								
Conway, S. C.	40	7	3.1	2, 3	0.6	12, 24	1.6	2.5
Savannah River.								
Calhoun Falls, S. C.	347	......	3.6	1	2.0	22	2.6	1.6
Augusta, Ga.	268	32	13.7	31	7.3	23	9.5	6.4
Broad River.								
Carlton, Ga	30	......	3.9	31	2.5	21-23	3.0	1.4
Flint River.								
Albany, Ga	80	20	16.0	2, 3	1.4	22, 25	5.3	14.6
Chattahoochee River.								
Westpoint, Ga	239	20	15 8	29	3.5	22	5.4	12.3
Ocmulgee River.								
Macon, Ga.	125	20	18.3	3	3.3	22, 26	5.4	10.0
Oconee River.								
Dublin, Ga.	60	30	19.0	1	1.0	24	5.5	18.0
Coosa River.								
Rome, Ga	225	30	10.5	1	2.4	22-24	4.4	8.1
Gadsden, Ala	144	18	14.1	1	1.5	23	4.9	12.6
Alabama River.								
Montgomery, Ala.	265	35	29.0	1	3.6	25-27	9.6	25.4
Selma, Ala	212	35	34.8	1	4.4	28	12.4	30.4
Tombigbee River.								
Columbus, Miss.	303	33	19.7	1	0.0	19	6.5	19.7
Demopolis, Ala.	155	35	55.3	3, 4	8.7	21	31.1	46.6
Black Warrior River.								
Tuscaloosa, Ala	129	43	41.0	1	5.6	19	15.4	35.4
Columbia River.								
Umatilla, Oreg	270	25	16.6	1	10.2	29-31	12.8	6.4
The Dalles, Oreg	166	40	26.8	1, 2	15.1	31	20.3	11.7
Willamette River.								
Albany, Oreg	99	20	2.4	1	1.4	28-31	1.7	1.0
Portland, Oreg	10	15	14.7	1	7.3	31	10.8	7.4
Sacramento River.								
Red Bluff, Cal.	241	23	− 0.3	1-6	− 0.5	27-31	−0.4	0.2
Sacramento, Cal.	70	29	10.8	1	8.3	31	9.3	2.5

* 25 days only.

Chart I. Tracks of Centers of High Areas. July, 1900.

Chart I. Tracks of Centers of High Areas. July, 1900.

Chart II. Tracks of Centers of Low Areas. July, 1900.

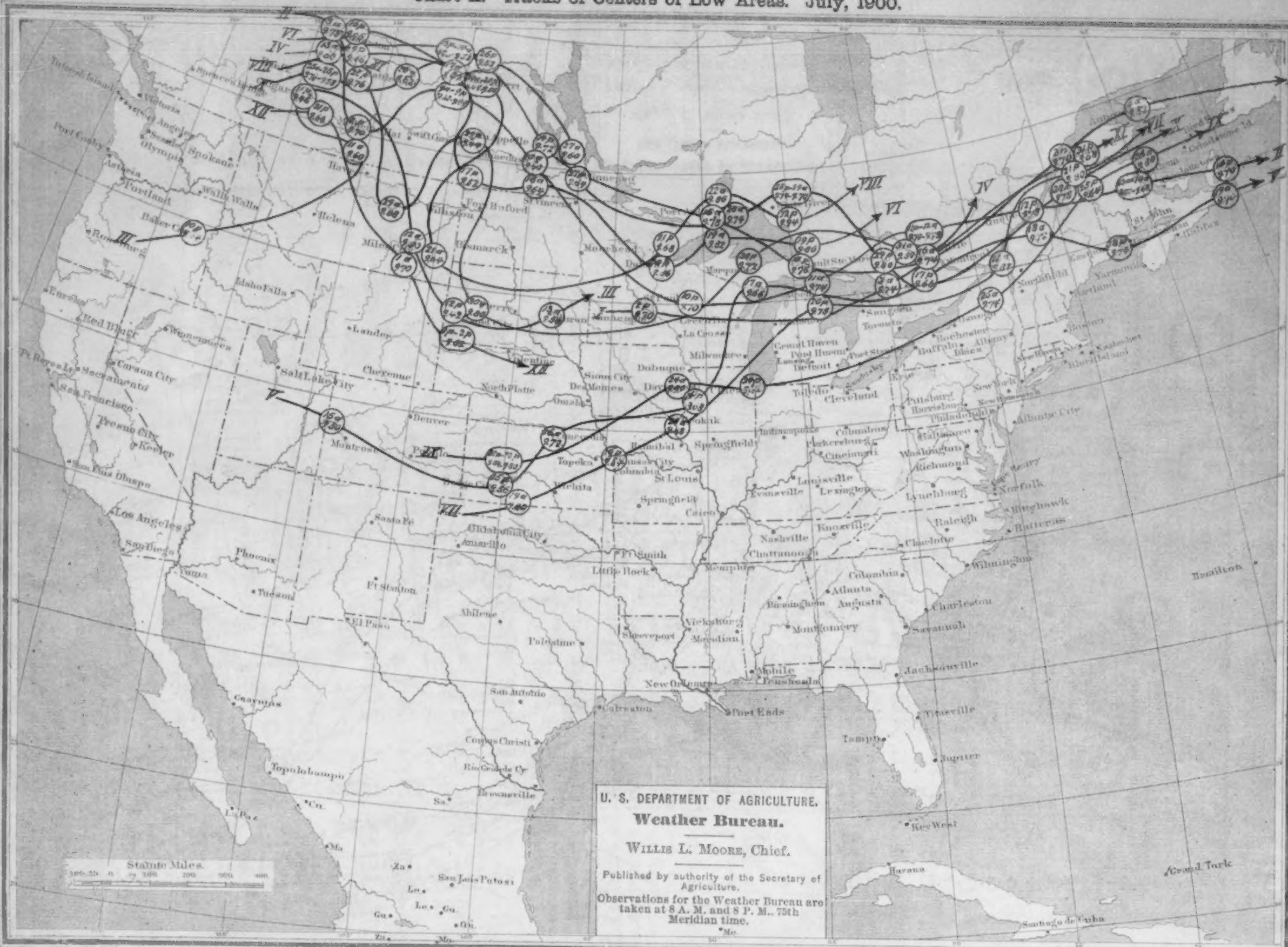

Chart III. Total Precipitation. July, 1900.

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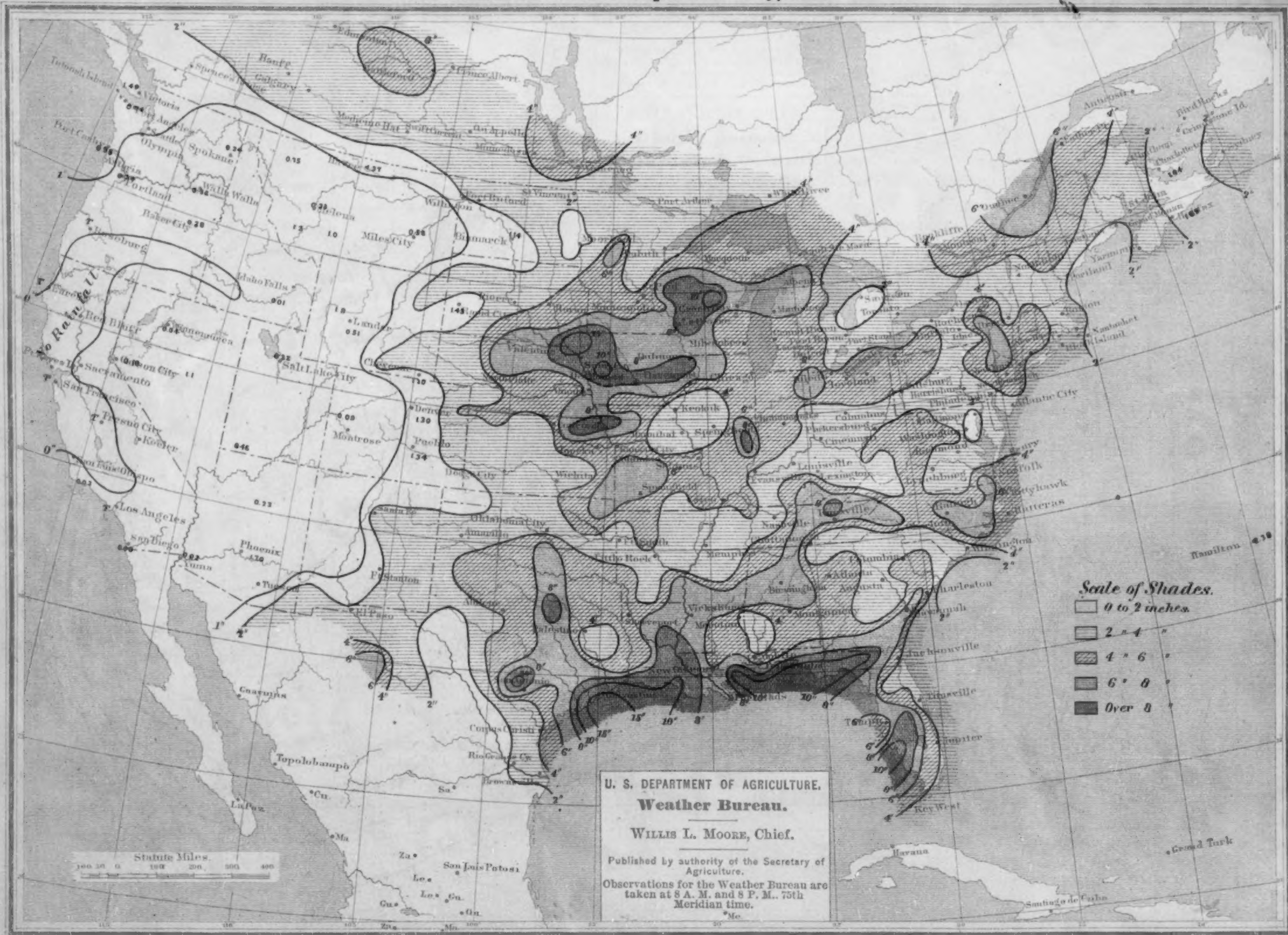

Chart IV. Sea-Level Pressure and Temperature; Resultant Surface Winds. July, 1900.

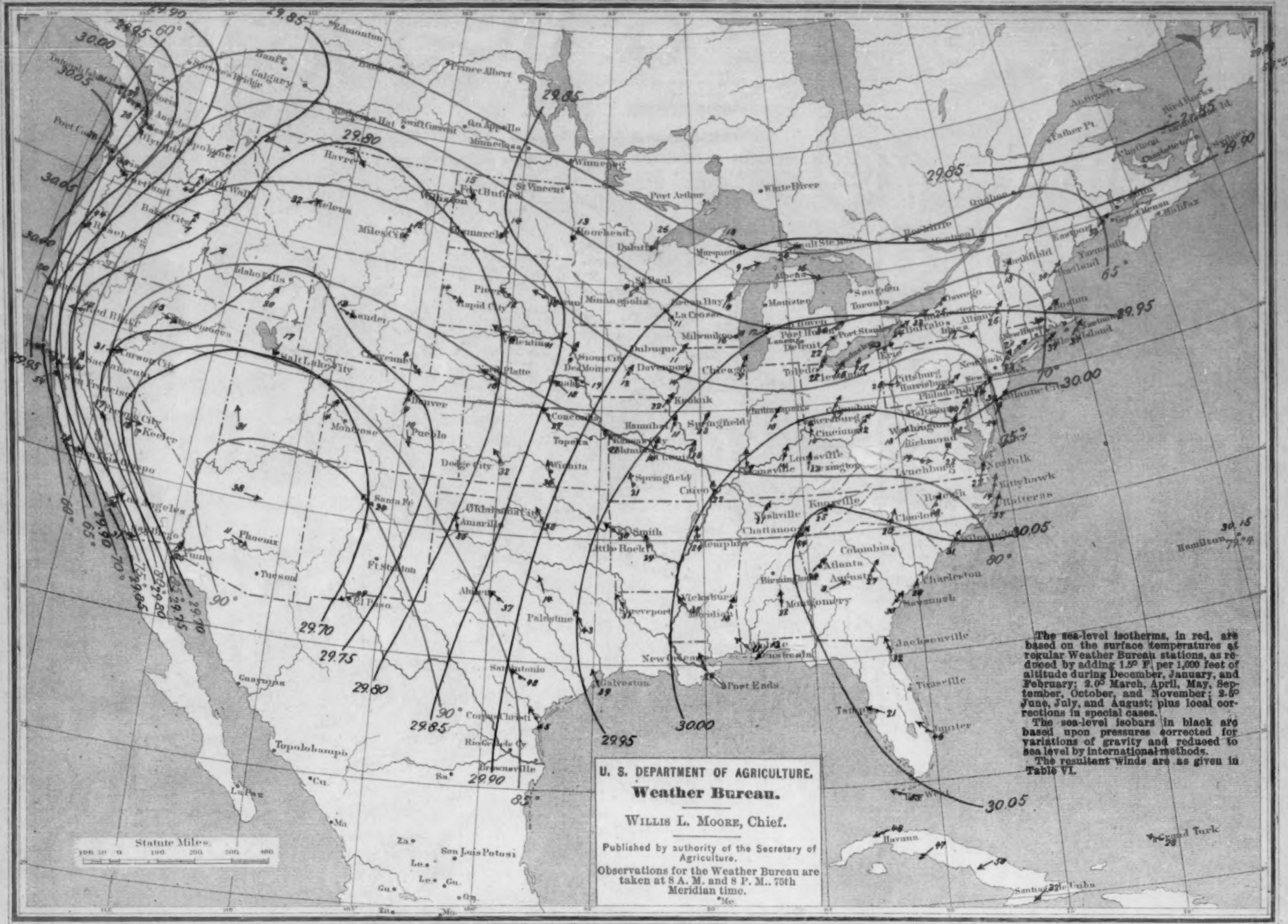

Chart V. Hydrographs for Seven Principal Rivers of the United States. July, 1900.

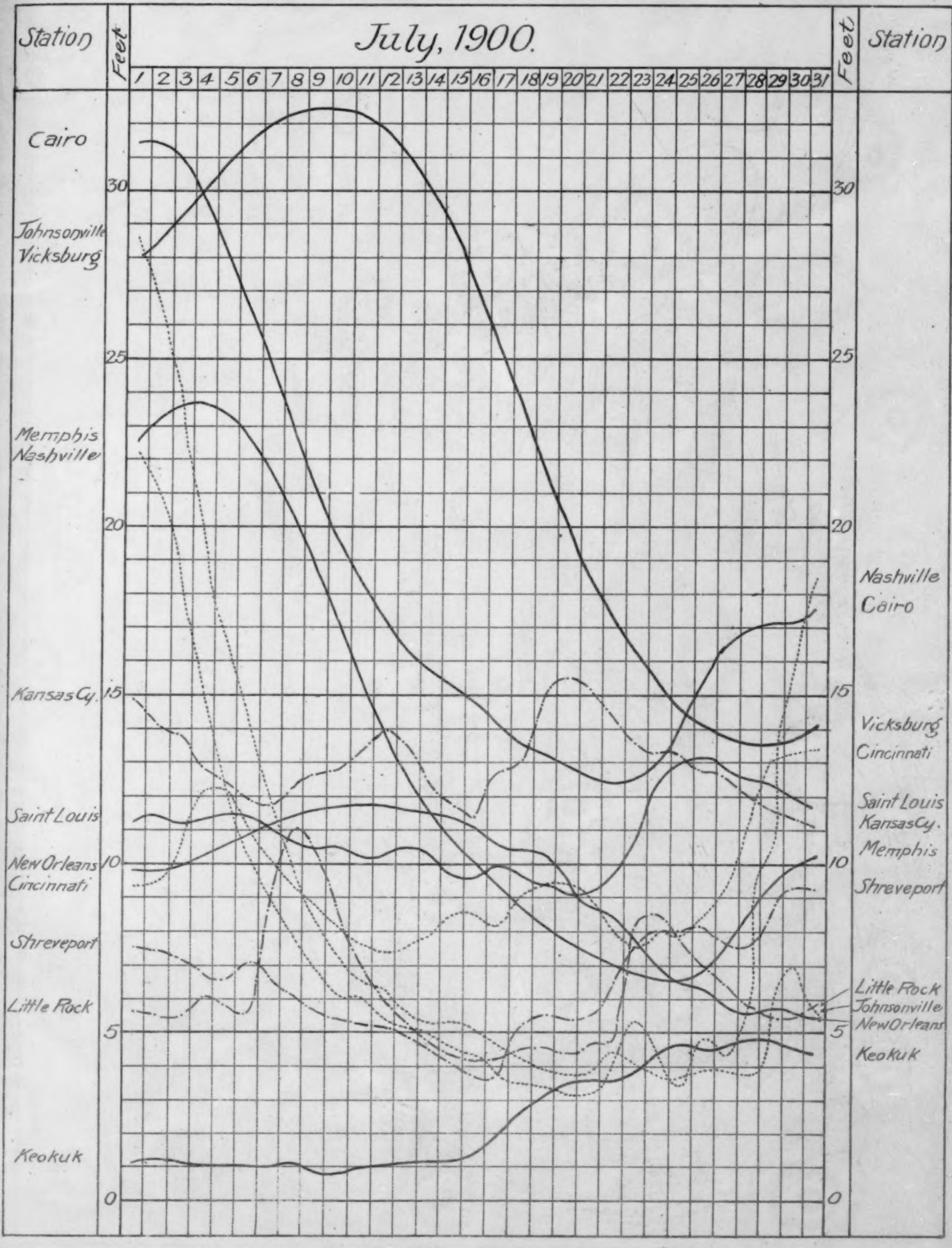

Chart VI. Surface Temperatures; Maximum, Minimum, and Mean. July, 1900.

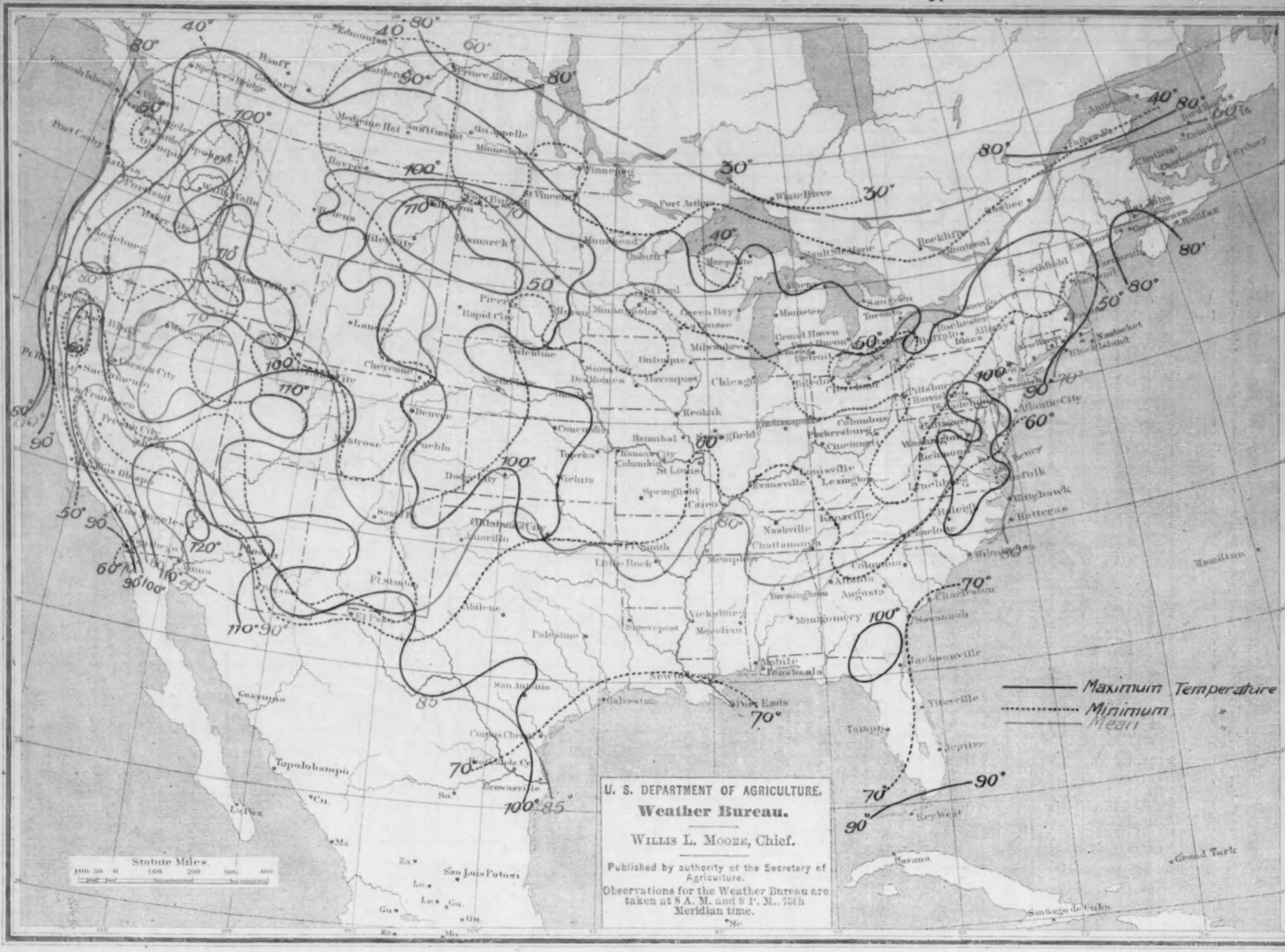

Chart VII. Percentage of Sunshine. July, 1900.

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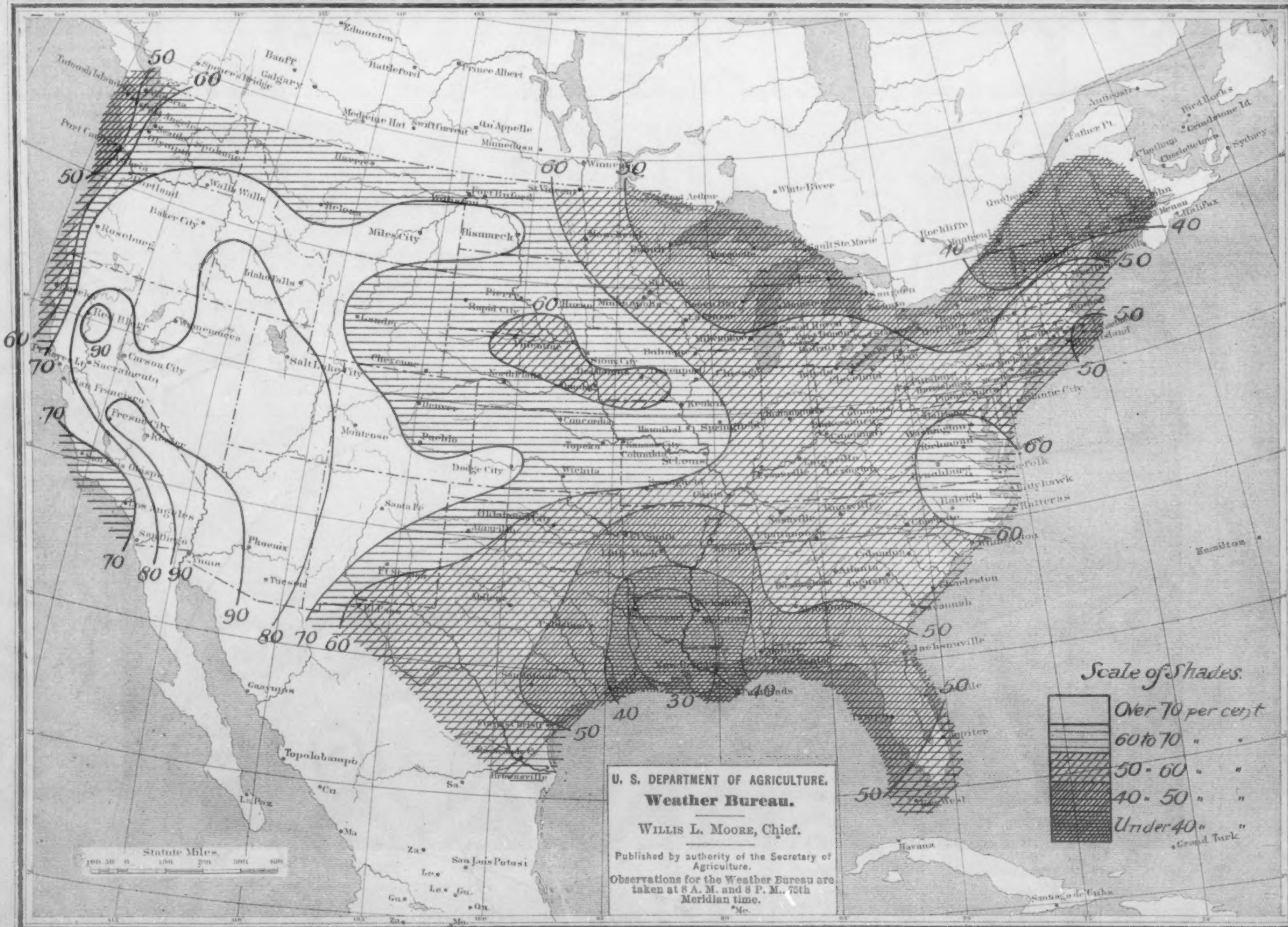

Chart VIII. West Indian Monthly Isobars, Isotherms, and Resultant Winds. July, 1900.

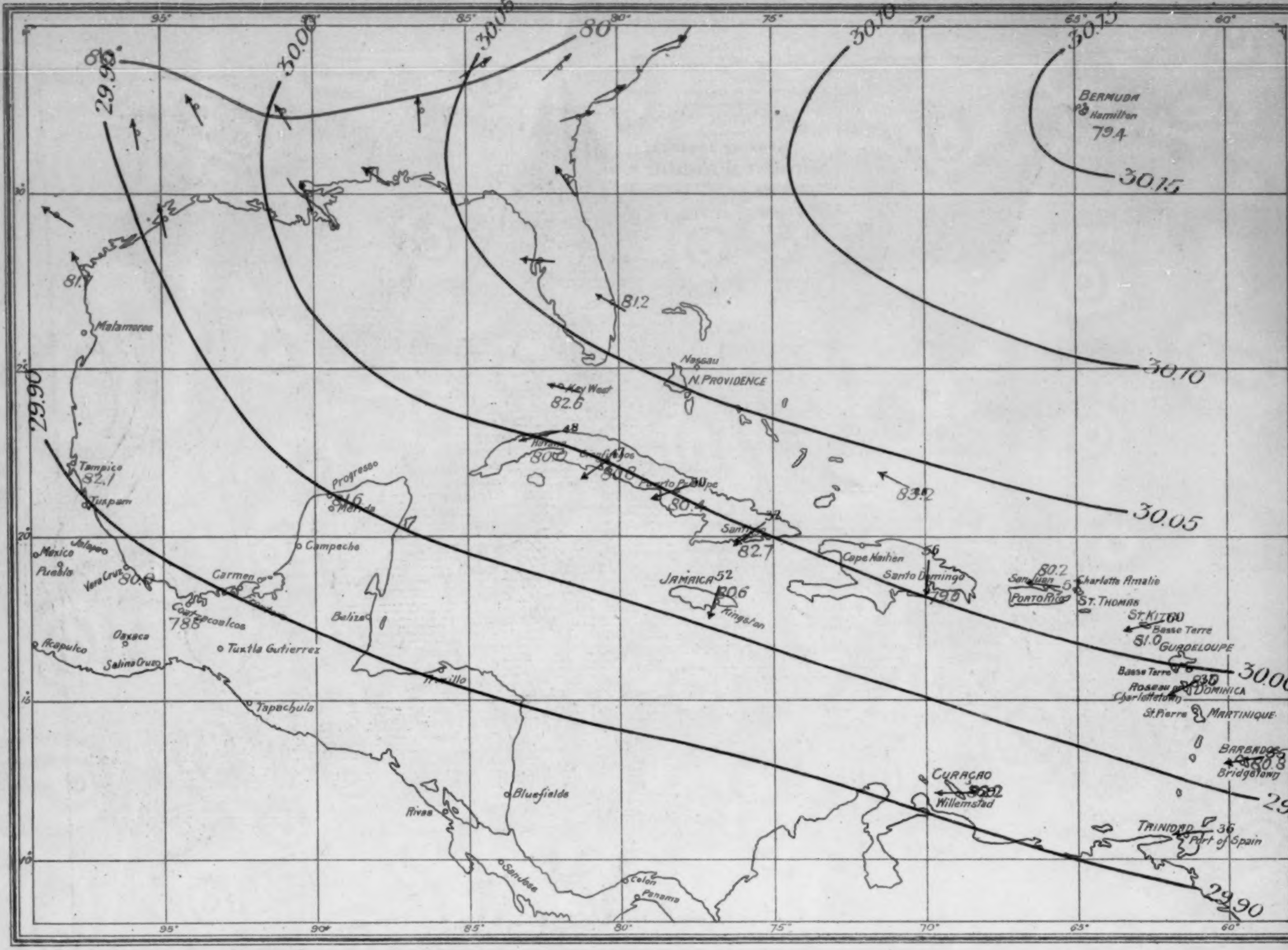

Plate I. Fog over the Golden Gate. View from U. S. Weather Bureau Observatory, Mount Tamalpais, Cal.

Plate II. Fog streaming in from the Pacific.

Plate III. Valley Fog. Originally sea fog but augmented by radiation about sunset.